Home Computing WEEKLY

An Argus Specialist Publication

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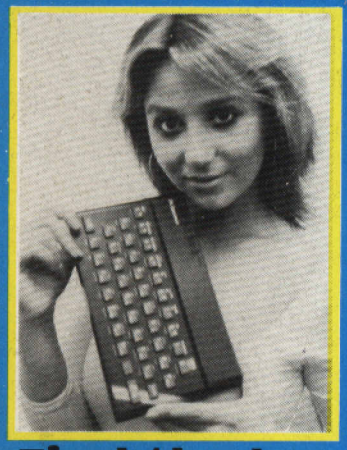

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Top quality games to type in for: VIC-20, TI-99/4A, Spectrum, ZX81 and Dragon

Software reviews for: VIC-20, BBC, Oric, TI-99/4A, Spectrum, Jupiter Ace, Commodore 64, Lynx, Dragon

Tips on programming your Atari

GIRLS MICROS ARE FOR YOU, AS WELL

SOFTWARE companies and teachers are fighting to remove the "boys-only" tag from computing.

Two new reports highlight the fact that few girls use computers, at home or at school. And the same applies to their mothers.

A survey by Audits of Great Britain shows that boys are 13 times more likely than girls to use the home computer. And just four percent of girls and mothers use them.

AGB's Peter Snell believes the imbalance will fade as software more suited to girls and women is produced.

And education advisor Brian Steven has just produced a report on schools in Sheffield which shows that for every nine boys only one girl takes up computing — an improvement on the 11-to-one ratio of two years ago.

His education authority is going to the Equal Opportunities Commission for cash to finance a year-long study in a primary school.

He said: "We propose to saturate a primary school with computer equipment and have a full-time teacher who is knowledgeable on computers to ensure that the opportunities are evenly spread.

"We hope that by positive discrimination that we can produce courses which are as interesting to girls as they are to boys."

Mr Steven, who has his own Spectrum, said: "Boys tend to push girls out of the way — they take a fairly aggressive attitude."

If his authority's submission was successful, the EOC would pay the teacher's salary and there would be a written report circulated.

He believed the problem was the same as with science subjects and based on the attitudes of parents, job expectations and social background. Parents thought it was a boy's subject and that exam passes would lead to the better-paid jobs.

Mr Steven said: "There are supposed to be 40,000 jobs in computing but school leavers have difficulty finding where they are."

Commodore's software manager Gail Wellington said she is tackling the problem with more programs designed to appeal to women and girls.

Mrs Wellington, who comes from Boston, said: "I don't think the problem is as severe in the States as it is here. Science subjects are given short shrift in favour of more classical education, particularly for women. There are not, for example, as many women engineers.

"Computing is a natural for women as it needs a rational mind and intuition and is not physical.

"We as software manufacturers have neglected programs which would appeal to women, and especially to female children.

"Having said that, I have a problem trying to do something

Continued on page 3

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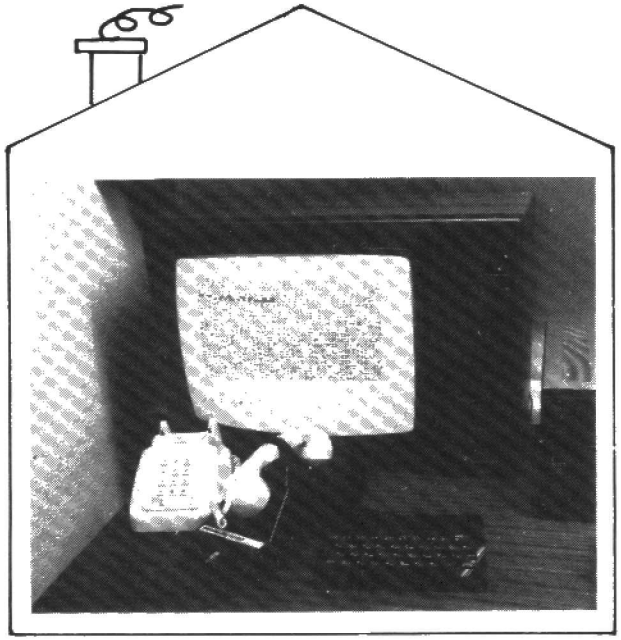

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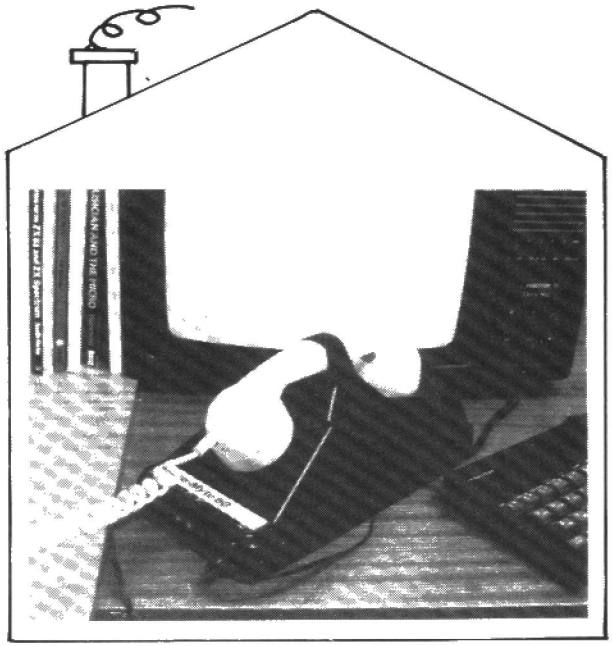

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Continued from front page

different from shoot-'em-up games. Which comes first, the chicken or the egg?

"We are working on programs which are not in the traditional violent masculine image. We have one on the way called Butterfly Catcher and there will be some others in the same vein using a fairyland scenario.

"I've had to insist at times and I've had to sell the idea."

Mrs Wellington, mother of two sons, heads a team of 12 technical staff at Commodore's Slough headquarters — four are women.

National statistics show four times as many boys than girls take GCEs at A-level in computer science.

Gloria Callaway is head of a 180-pupil Hackney junior school as well as a programmer for educational software house ASK.

She said: "When our school computer is delivered girls will be very much encouraged and the time will be split."

Heather Lamont, partner in Rabbit Software, said: "The girls should say: 'It's my computer as well.' After all, the computer is usually bought for the family.

"The biggest thing girls must learn is not to be frightened of computers, they are not as difficult as they think."

Miss Lamont, 22, spoke of her schooldays: "When I was in the physics class there was only me and one other girl. And it was the same with chemistry.

"When I first started in sales with a computer firm there was a lot of comment. They did not think I would last long. I don't think they thought women were quite as level headed. It's quite the reverse."

Cheaper graphics

Salamander has cut the price of its EDG Graphics Package for the BBC B. The new prices are £20 for the tape based version and £25 for the disc — a reduction of £5 in each case.

Owners of the tape package can upgrade to disc for £11.50 if they return their packages to Salamander.

Salamander Software, 17 Norfolk Road, Brighton, East Sussex BN1 4AA

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SOFTWARE SUPERMARKET

Microdrives revealed

Sinclair's microdrives, due out soon, will run endless loop tape cartridges costing under £5 each.

As the long-awaited launch approaches, software companies are preparing to market sophisticated programs making use of the 3½ sec access time and up to 100K of storage.

Microdrives themselves will cost about £40, and up to eight can be linked. Users will also need an interface unit, at around £30, which will offer networking as well as the industry standard RS-232 interface which lets other peripherals work with the Spectrum.

It will, however, be some months before these new products are in the shops. Sinclair Research's managing director Nigel Searle said they would first be offered to customers on the company's mailing list.

And when the list was exhausted, the first batches for shop sale will probably go to W.H.Smith.

The wedge-shaped ZX Interface 1 fits under the Spectrum, tilting it forward.

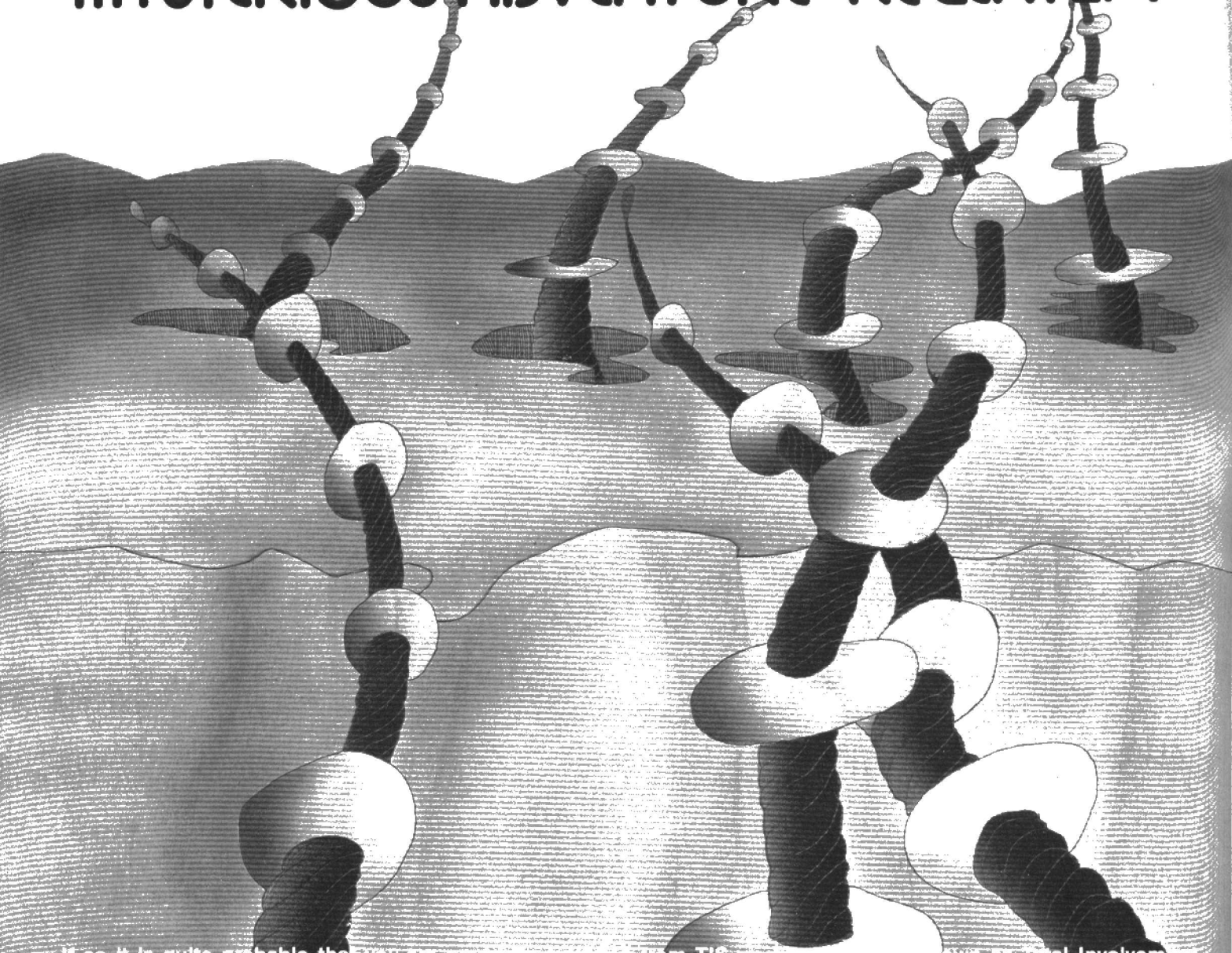
The Microdrives are similar to the units which have appeared in Sinclair adverts, and measure 3½ in by 3 in by 2 in.

And the tape cartridges are 1¾ in by one and an eighth inches by just three sixteenths of an inch. The tape inside is just over 17ft long and a sixteenth of an inch wide.

Stewart Binnie, merchandise controller for W.H.Smith, said, 'We are very excited about the product and we will certainly take the bulk of sales. But we don't yet know when to expect them.'

Already add-on makers are anxiously trying to get samples of the Microdrives to see how they can link them to other best-selling computers.

HAVE YOU BEEN INVOLVED IN A MYSTERIOUS ADVENTURE RECENTLY?



If so, it is quite probable that you are [illegible] from TIS, [illegible] as Total Involvement Syndrome.

TIS manifests itself in a number of ways, one of the more dramatic symptoms [illegible] a complete inability to feel at ease in the world of reality. Other symptoms include insomnia, a desperate [illegible] a Mysterious Adventure, and an overwhelming sense of acute [illegible].

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[illegible] d about this ep[illegible] TASIA, a company [illegible] involved in [illegible] elopment work [illegible] There is probably no cure for TIS other than mains [illegible] M chips etc. which can be at best [illegible] temporary solution". "In the absence of a more permanent [illegible] vise TIS sufferers to submit to the syndrome and obtain Mysterious Adventures from any sources [illegible] to them". "TIS is highly contagious and in [illegible] of the current Worldwide Epidemic, I would say enjoy it while [illegible] can, resistance is futile".

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Finger on the button

Following in the cinematic footsteps of Tron is Wargames, a film about a boy computer genius who finds himself trying to stop the countdown to a global thermonuclear war. And there you were worrying about RAM pack wobble.

David Lightman, Wargames' hero, is a failure at school. But when he sits down at the keyboard...he can change his school grades, and cheat the phone company.

One day he happens to key into the US Air Force Command Centre computer, only to find that world destruction is imminent. Can he win his chilling race against time?

The answer is probably yes. But you can make sure when Wargames — directed by the man who made Saturday Night Fever — opens in London on August 18, at the Leicester Square Odeon. If you live out of London, you'll have to hang on for the nationwide release nine weeks later.

Alternatively, you can read the film of the book, rushed out by Penguin and Puffin to coincide with the launch. Described as a "nailbiting novel" (wasn't it supposed to be about computers?), it costs £1.75 for the Penguin or, for younger readers, the Puffin costs £1.50.

Penguin Books, 536 Kings Road, London SW10 0UH

Spectrums: 4 in court

Four people, including a teenage girl and boy, have faced magistrates following a warehouse raid which netted Spectrums worth £390,000.

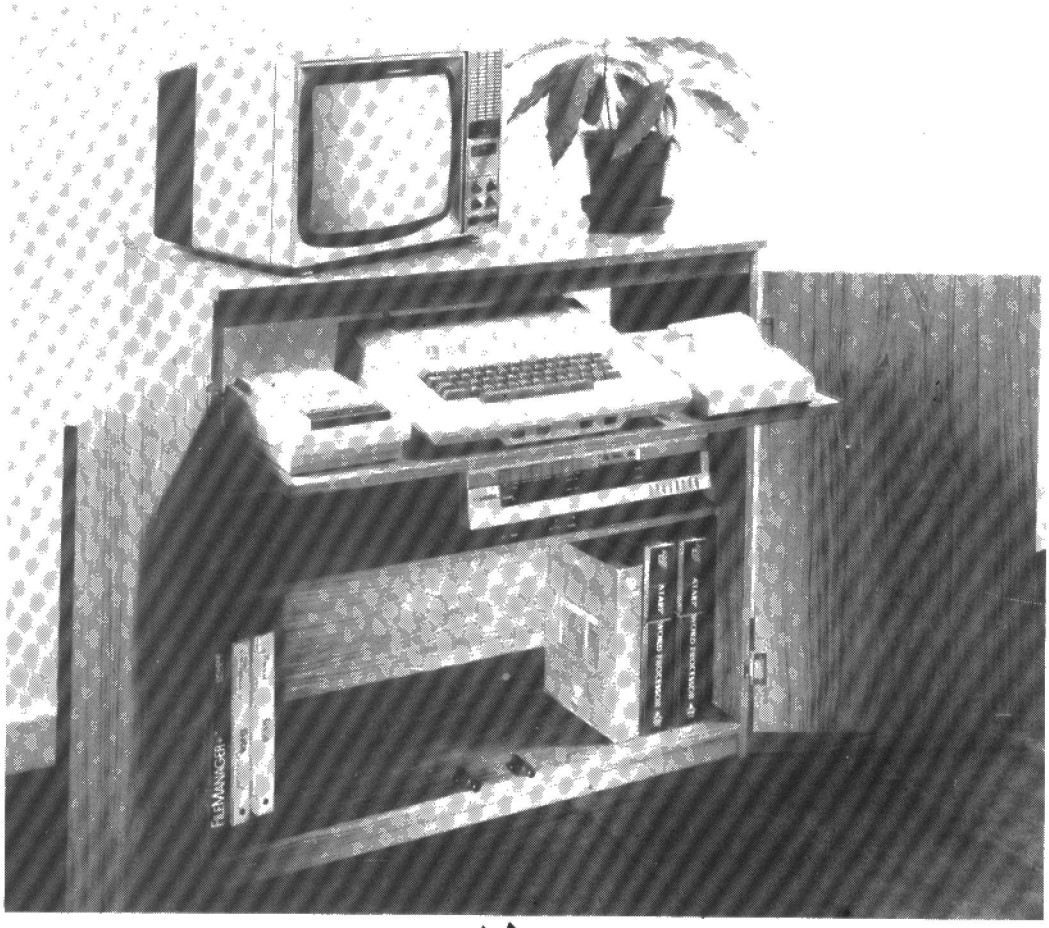
They face charges of handling stolen property and all were remanded to a further hearing, two of them in custody.

The robbery took place three weeks ago at the TNT warehouse, on the Cranford Lane Industrial Estate, Hornsey, and the computers belonged to the distribution company, Prism.

A girl car driver, with a male passenger, faked a crash to lure the security guard and the estate manager from the warehouse then two other raiders appeared armed with a shotgun and handgun.

The car drove off at high speed as the rest of the gang trapped the two men in the back of a lorry and loaded up two other TNT lorries with computers, mostly 48K Spectrums in boxes of 10, plus ZX81s and some software.

Later 13 Spectrums, a ZX81 and a single power pack were found, ruined, in the Thames.



One way to shelve your micro

Computer cabinet

It must be a sign of the times. People used to have cocktail cabinets — now the cabinets house computers instead.

Marcol Trading has designed a cabinet to hold not only your computer, tape recorder and printer, but your video recorder as well, on two shelves which slide out to form a desk and slide back when you don't need them.

Underneath, there's storage space for essentials like cassettes, books, listings, joysticks and copies of Home Computing Weekly.

The cabinet has a genuine teak-effect finish, and arrives packed flat — you bolt in together yourself. It costs £95 including delivery.

Marcol, 8 Bugle Street, Southampton SO1 0AJ

Computer competition

Buy a tub of ice cream and win computers and software. Bug Byte, Lyons Maid and Cordon Bleu freezer centres have got together to run a competition offering a Spectrum, ZX81, software and nine other prizes. Closing date is August 15.

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Newest — is it really always best?

As time goes by, I grow more and more convinced that the microcomputer industry has gone mad.

Almost every week now you hear of incredible new micros being launched, or "coming soon" and, to the compu-freak, it doesn't really matter that every time he rings the despatch department he is told his computer will be coming next week, and next week, and next week because it is new.

New! New! New! The advertising man's magic word! If something is new, some poor idiot is sure to buy it. Computers are now the latest craze, like skateboards, deely-boppers and the rest, and it's quite likely that fourth-former Joe Bloggs wants a computer just because his best friend has one, not because he wants to further his horizons.

It would be extremely difficult for anyone to make a movie satirising the home computer industry because it's doing very well satirising itself. The letters page of almost any home computing magazine can be found bulging with letters praising the virtues of the ZXY Gargle-Blaster over the ABC Dingbat. Full page ads in the mags proclaim to the world that the Zappo 2 computer has a (hey wow!) "professional keyboard". In fact it has a keyboard where the letters aren't even on the keys they belong to and where the actual keys resemble individual molars from a set of false teeth, but it's still better than the ROYGBIV micro which has a keyboard which feels like dead leeches.

You may walk into your local branch of Grixohams and find out that the salespeople know about as much about their charges as the Neanderthal Man, and will tell you almost anything for their commission. Whatever happened to quality?

Almost every review has niggles about colour which ripples along the edges of the screen and characters which make you seasick, or screens which behave like demented kangaroos whenever a sound command is issued, or the computer with a CIRCLE command that draws ovals, or the cassette interface that gives so much trouble.

In the race to produce newer, brighter, more colourful and noisier micros, quality has been something that gets in the way.

In the future, perhaps, people will say that there was a saying; build a better mousetrap and the world will come flocking to your door. But in the mid '80s the phrase is "Write a better Pacman, and the world will come flocking to your door." Where are the really original software ideas?

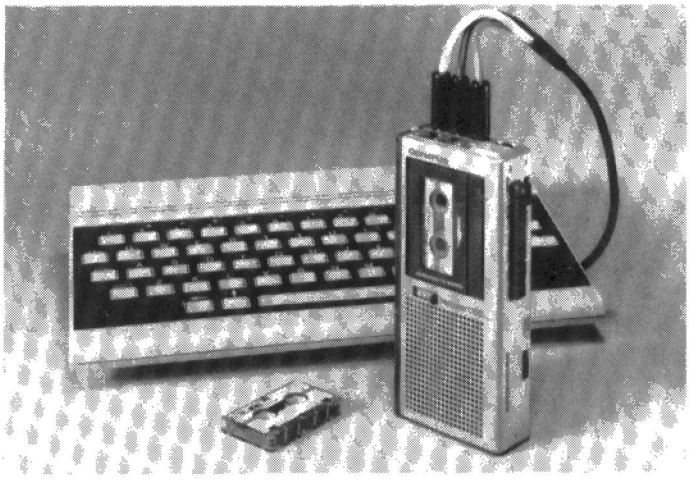
Don't be deceived into thinking that just because a computer is new it is necessarily better than an older computer. I have owned the same computer for the last three years. It's a Microtan 65 system, and although now the company that makes it has changed from Tangerine to Microtanic, the Microtan remains largely the same as it did three years ago when it too was new. My Microtan will last me quite some years yet, because it was made with quality and versatility in mind.

My Microtan may look a little old and grey besides today's brash cheap 'n' cheerful jobs, but an old Rolls Royce (or Bentley, or Jaguar) is better than a brand new Mini. If I want colour and sound then all I have to do is buy a board and plug it in, and the cassette interface is amazingly reliable.

My Old Faithful will probably outlast the Spectrum or the Oric, I've got hi-res graphics that would shame the BBC micro and, unlike some things which have in-built obsolescence, my old computer can and does allow for the future.

Newest, is decidedly not always best, and it takes a true individual to realise that. Here's to quality, OK?

Anthony John Shepherd
Freelance writer
Barnsley, Yorks



The incredible shrinking cassette recorder

Carry on recording

You can take portability a stage further with Olympus's new Pearlcorder C100, a microcassette recorder specially designed for home computers.

The C100 measures about 5½ in by 2½ in by 1 in, and weighs 10.2 ounces including batteries. It will also run off the mains with an optional adaptor.

Features of particular interest to computer owners are a tape counter, a pause button, and a phase reverse control.

As well as 60 min and 90 min micro cassettes, you can buy a special 30 min micro cassettes, though at £1.20 it's more pricey than standard-sized computer cassettes.

If you want to use the C100 for voice recording, there's a slower speed available which gives you twice as much recording time on each cassette.

The C100 costs £50-55.

Olympus, 2-8 Honduras Street, London EC1Y 0TX

Sinclair is innocent

Perhaps micro firms are mending their ways. The latest batch of complaints received by the Advertising Standards Authority included only two that related to the home computer industry — and one of those proved to be unjustified.

Sinclair Research, which has been pulled up by the authority five times over the past year, was the innocent party this time. The authority got a complaint about an ad for the 16K Spectrum which said that "you can return it later for an upgrade".

A man complained that he had sent his 16K Spectrum back to be upgraded only to find that the service wasn't yet available. But the authority agreed with Sinclair that the ad was not misleading.

But Control Technology, of Hyde, Cheshire, was caught out when a customer complained about its ad for a 16K RAM pack for the ZX81.

The ad said the pack included a program to predict the results of horse races and football pools — but the program had nothing to do with football, and didn't have much to do with horse racing either. The program is no longer being advertised.

Advertising Standards Authority, Brook House, Torrington Place, London WC1E 7HN

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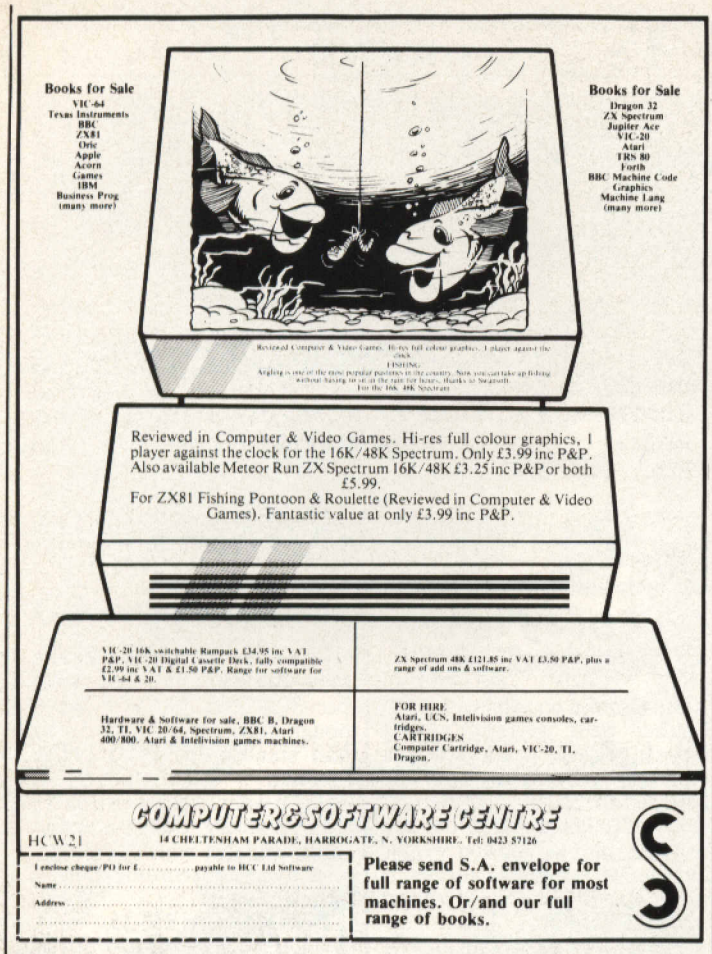

You could be on our pages

We welcome programs articles and tips from our readers.

PROGRAMS should, if possible, be computer printed to a width of 48 characters (use a new ribbon) and/or sent on cassette. Check carefully that they are bug-free. Include details of what your program does, how it works, variables you have used and hints on conversion.

ARTICLES on using home computers should be no longer than 2,000 words. Don't worry about your writing ability — just try to keep to the style in HCW. Articles most likely to be published will help our readers make better use of their micros by giving useful ideas, possibly with programming examples. We will convert any sketched illustrations into finished artwork.

TIPS are short articles, and brief programming routines which we can put together with others. Your hints can aid other computer users.

Competitive rates are paid.

Keep a copy of your submissions and include an SAE if you want them returned. Label everything clearly and give a daytime and home phone number if you can.

Paul Liptrot, Home Computing Weekly, 145 Charing Cross Road, London WC2H 0EE

NEWS

Fifth for fast movers

Your Spectrum can work out your bank balance and move space invaders round the screen — at the same time.

That's the claim made by 15-year-old Richard Taylor, a Suffolk schoolboy, who has written a program called Fifth.

It is due out in about six weeks from CRL at about £10, including a 16,000-word manual.

Richard wrote CRL's Hi-Res graphics program for the ZX81.

Talking about his latest program, he said: "To write fast moving games BASIC's no good and machine code is too hard and takes too long for most people.

"Everyone will want Fifth because they can get fast-moving graphics with no fuss.

"It gives the Spectrum the power of parallel processing. My program could work out someone's bank balance while moving about a bunch of space invaders."

According to CRL, Richard's program adds 25 new commands, including GET, REPLACE, PUT, LARGE, SOUND, LET, ERASE, MOVE and RMOVE. It is said to have 155 speeds, 16 movement vectors and can produce characters or sprites of up to 22 by 32.

Fifth, cheekily titled after the so-called fifth generation of computers, is interrupt driven, so allowing apparent dual processing.

Clement Chambers, CRL's youthful managing director, said he had offered Richard a job for when he completes his education.

Mr Chambers said he would like Richard now to create a special BASIC for the Spectrum to make games programming simpler.

● CRL is sponsoring four teenagers who are building a micro-mouse to take part in a Europe-wide competition in Madrid in September.

CRL, 140 Whitechapel Road, London E1

Commodore's prices fall

Commodore has now officially announced the long-expected price cut for the Commodore 64. The cut is effective from August 1, and at the same time, prices of peripherals, memory expansion and games cartridges fall.

The 64 comes down to £229 from £345, though Commodore expects that some retail chains will be selling it for even less than that. Single floppy disc drives will cost the same — they currently cost £300.

For the VIC, 3K of RAM will drop to £20 from £30, 8K will be £30 instead of £50, and 16K will be £40 instead of £75.

But the most dramatic reduction is on games cartridges. From August they will be halved to £10 instead of £20 upwards.

Commodore, 675 Ajax Avenue, Slough, Berks

Learning goes home

Longman has already brought out a range of micro software for use in schools. Now it has put its head together with Micromega to bring out three educational programs which you can use at home. They're all for the Spectrum, and are meant for children aged four to eight.

A,b,c...lift off encourages children to match words to pictures by loading up a spaceship to Venus. Objects can only be loaded if they correspond to a word on the screen. When the spaceship is full, it takes off.

Countabout teaches addition and subtraction — get the answers right and a monkey climbs a tree.

And in **The Hot Dot Spotter** you count the dots to stop a ball before it can drop to the bottom of the screen.

The programs cost £7.95 each.

Longman, Burnt Mill, Harlow, Essex CM20 2JE

Spectrum joins up with Micronet

Four months after the launch of Micronet, the low-cost videotex service for home computer users, a Micronet adaptor has been developed for the Spectrum.

It's hard-wired modem, called the Prism VTX 5000, which fits under the Spectrum and connects it directly to the phone via a jack plug.

As well as acting as a modem, the VTX 5000 offers extra features. It allows full Prestel graphics to be created, and frames to be printed out using the Sinclair printer.

The VTX 5000 itself costs £100, and first supplies will go to Spectrum owners who have already sent in enquiries to Micronet. In addition, the jack plug connection (which must be carried out by British Telecom) costs £25.

But for the first couple of months at least, you can take advantage of a special offer of free jack plug installation.

Micronet 800, Durrant House, 8 Herbal Hill, London EC1 5JB

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NEWS

Getting the bird

In Terror-Daktil 4D, Melbourne House's latest game for the 48K Spectrum, you're stranded in an alien land. Can you last out the six days until you're rescued, or will the ferocious Terror-Daktils get you first?

The program uses 3D graphics (the fourth dimension is time), and what Melbourne House describes as "a chillingly compelling theme tune". It was written by Alan Blake, who said: "I wanted the game to jump out of the screen".

The game took him five months to complete.

Alan's advice on playing Terror-Daktil is: "Try to keep alive for the first day at least if you're looking for a high score. It should be possible to score a million, but if you get between 10,000 and 20,000, I'd say you're doing extremely well.

Price: £6.95. Look out for a review of the game in a future issue of Home Computing Weekly.

Melbourne House, Glebe Cottage, Glebe House, Station Road, Cheddington, Leighton Buzzard, Beds LU7 7NA

Alan Blake

Computer centre opens in Herts

Hemel Hempstead now has a new computer shop. Called The Hemel Computer Centre, it is selling Atari, Commodore, TI, Sharp and Dragon home micros, plus a range of software and peripherals.

Later on, it may move into business micros.

According to one of the directors, Steven McBride, good service will be the keynote of the new store.

He said: "We know that microcomputers are now available from many of the chain stores. But we feel our strength lies in the fact that we are a specialist shop, with the knowledge and experience to provide a more comprehensive service to the customer."

The Centre plans to offer service not only for its own machines, but those sold by other dealers in the area.

The Hemel Computer Centre, 52 High Street, Hemel Hempstead, Herts

Touch-sensitive issue?

This week's prize for the most bizarre way of modifying the ZX81's keyboard must go to The Improver, a small piece of cardboard which, its makers claim, enables you to raise an area over each key to give positive feedback when the key is pressed.

The Improver is basically a stencil which you stick to the 81's keyboard. Using it as a guide, you then draw a circle over each key with a ballpen, which apparently causes the encircled area to bulge upwards slightly.

Whether it works or not we can't yet tell you — it only arrived in the office this morning. Even if it does, £2 seems outrageously expensive for a small piece of cardboard.

But interested parties should proceed with caution — there's a possibility that using the device on your keyboard could invalidate the guarantee.

McQuillen, Penrhos, Glyn Circle, Kinmel Bay, Rhyl

Put your micro in a Space Station

Inspired by the flight of the Challenger space shuttle, Microage has called its computer desk the Space Station.

It's got space for printers, disc drives, a monitor, and cassettes, as well as for your micro, and is finished in tasteful teak vinyl. It costs £50.

Microage has also brought out a computer-compatible cassette recorder for £35.

And to tempt you into buying its more expensive computer goodies, it's introduced a discount card scheme. Card holders can get a five per cent discount on any hardware, — provided it's not a micro, and provided it costs over £100.

Microage, 135 Hale Lane, Edgware, Middlesex

Journey deep into space and save civilisation from an alien invasion

Your spacecraft is ready, laser cannons fully armed and your sealed orders are handed to you by Peter Berrecloth, who wrote this great game for the VIC-20, plus a joystick

You are the commander of the Vanguard spaceship which is able to move in any of eight directions.

Your mission is to travel as far into the Vangard system as you can, destroying aliens and their cities, meteors and fuel dumps with your laser cannon.

This two-part program runs in an unexpanded VIC-20 with joystick to five in three directions. It uses user-defined graphics extensively and leaves very little room in the memory, so don't leave spaces when typing in.

There are various screens to battle through. These are: homestretch, winding caverns (three sizes), minefields, docking ship, small walls, alien maze and, if you to too far, you will reach very large walls to battle through.

The screen scrolls from bottom to top and your fuel and lives are constantly displayed at the bottom. Your score and the high score are shown when either all your four lives are gone or you run out of fuel.

You get an extra man at 5,000 points. My best is 10,150 points (not easy).

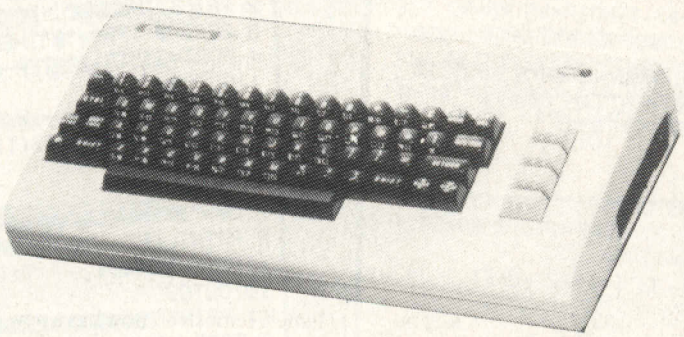
You are awarded one fuel point for a fuel dump and a full tank for docking (watch out for the wall).

There is no point in keeping to the far sides as you don't score anything!

Important: SAVE the first part before running it because of the SYS 64820. If NEW were used instead of SYS 64820 the second part would not fit in the memory. The SYS command my be changed to POKE 198,10: POKE 632,131: SYS 64824 to enable the second program to load and run automaticlaly, if required.

Main variables

D volume
I for player's ship position
J lives left
H position of bomb
K fire direction flag
L fuel
X score
Y high score
O PEEK location of ship
P character used for bomb



```
0 GOSUB5000:GOSUB8000:GOSUB5500:GOSUB5600:GOSUB900
0
1 DEFFNU(X)=INT(RND(1)*X):GOTO10
5 POKEI,1:POKEI-22,37:POKEI-44,32:POKEF,0:RETURN
10 PA=37151:POKEPA,0:PB=PA+1:RB=PB+2
15 M=PEEK(PA):POKERB,127:N=PEEK(PB):POKERB,255:X=X
+1:GOSUB5
20 IF(MAND4)=0THENI=I-22:GOSUB6000
25 IF(MAND8)=0THENI=I+22
30 IF(NAND128)=0THENI=I+1:GOSUB6005
35 IF(MAND16)=0THENI=I-1:GOSUB6010
40 IF(MAND32)=0ANDK=0THENL=L-.2:GOSUB5500:GOSUB601
5
41 IFI<7680THENI=I+22
42 IFI>8185THENI=I-22
45 IFK=0THENH=I:GOTO80
50 POKEE,200+(K*3):ONKGOTO55,60,65
55 POKEH,G:POKEH-22,G:H=H+22:P=194:GOTO70
60 POKEH,G:H=H-1:POKEH-21,G:P=192:GOTO70
65 POKEH,G:H=H+1:POKEH-23,G:P=192:GOTO70
70 O=PEEK(H+22):IFO<>32THEN5800
71 IFH>8185THENK=0:POKEE,0
75 POKEH,P
80 GOSUB5
85 O=PEEK(I+22):IFO<>32ANDO<>31THEN3000
90 IFTI$>"000030"THEN1000
95 IFRND(1)>.8THENPOKE8142+FNU(20),15
100 ONFNU(6)GOTO110,120,130,140,150
110 PRINT" ▮SC▮                    ▮ BS":GOTO15
120 PRINT" ▮E▮                      ▮▮":GOTO15
130 PRINT" ▮SG▮                    ▮FS":GOTO15
140 PRINT" ▮I▮                      ▮H":GOTO15
150 IFRND(1)>.5THENPRINT" S▮L▮M                    M▮N▮S
":GOTO15
155 PRINT" ▮R▮I▮                    ▮[▮R▮"
160 GOTO15
1000 IFTI$>"000050"THEN2000
```

Hints on conversion

Not very easy to all but here goes.

Reverse field characters and what they do: **R** reverse video — normal video, **Q** cursor right, **I** cursor left, **O** cursor up, **open heart** draw screen and **S** cursor home.

All others are just colours and are not important.

POKE 36867,48 produces an extra line at the bottom to display lives and fuel which is not affected by scrolling. POKE 36869,255 obtains hi-res mode with reverse field R producing text. 36874-36877 are the voices. 7680-8185 are the screen locations. 38400-38805, colour locations. 30720, colour location — screen location.

All PRINT statements need to be altered because they are 20 characters long, enough to fill the VIC screen with a gap either side and any fnu (22)'s need to be changed to however many characters fit in a row on your computer. The joysticks and hires loadings need to suit your computer.

The function in line 1 may have to change. It is called by fnu (X)

How it works

Main subroutine 5: draw ship
10-40 set up and read joystick
41-42 make sure you don't leave the screen
45 Updates bullet start position when not firing (K O)
50-65 calculate position of bomb
70-75 check for hit and draw bomb
85 check for crash!
100-160 homestretch routine
1005-1030 wiggly tunnel routine
2000-2040 minefield, mutant, alien maze routines
2600-2605 docking ship
2700-2702 walls routine
3000-3002 check for docking
3005-3015 crash routine and check lives left
5000-5510 set up screen and variables
5600 draw lives
5800 scoring and ship erase routine
6015-6025 determine direction of fire by joystick
6501 game over routine and sounds

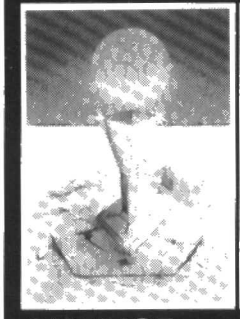
```
1005 PRINT"◣ SSSSSSSSSSSSSSSSSSSS7"
1013 IFQ>13THENQ=Q-2
1014 IFQ<2THENQ=Q+2
1015 IFX>2000THEN1017
1016 PRINTTAB(Q)"■■■
```

VIC-20 PROGRAM

```
128 DATA8,28,28,54,42,127,99,65
129 DATA128,67,36,24,16,44,194,1
130 DATA0,0,0,0,0,0,0,0
131 DATA8,16,8,170,85,8,16,8
132 DATA0,232,136,200,136,136,238,0
133 DATA114,69,69,101,21,85,34,0
134 DATA8,28,28,54,42,127,99,65
135 DATA16,16,56,60,118,118,44,56
136 DATA15,14,30,123,55,30,30,31
199 DATAS,C,O,R,E," ",T,A,B,L,E,*
200 FORT=0TO110:POKE7168+T+30720,0:NEXT
300 A$=" HIT ANY KEY TO GO ON"
301 PRINT"■■■■■■■■■■■■■■■■"LEFT$(A$,22)
302 W$=A$:Q$=RIGHT$(A$,43):A$=Q$+LEFT$(W$,1):FORR=
1TO80:NEXT:GETS$:IFS$=""THEN301
303 PRINT"■■■■■■■■■";:POKE36869,255
304 READA$:IFA$="*"THEN306
305 FORT=255TO128STEP-6:POKEZ,T:NEXT:POKEZ,0:PRINT
"■"A$;:GOTO304
306 A$="                              ■■ ■■= 100 POINTS":G
OSUB400
307 FORG=1TO20:PRINT"■■■■■■■■"LEFT$(A$,22):GOSUB40
0:NEXT
```

```
308 A$="                              ■■ ■■= 150 POINTS":G
OSUB400
309 FORG=1TO20:PRINT"■■■■■■■■■■■■"LEFT$(A$,22):GOSUB
400:NEXT
310 A$="                              ■■ ■■= 250 POINTS":G
OSUB400
311 FORG=1TO20:PRINT"■■■■■■■■■■■■■■"LEFT$(A$,22):GOS
UB400:NEXT
312 A$="                              ■■ ■■= 300 POINTS":G
OSUB400
313 FORG=1TO20:PRINT"■■■■■■■■■■■■■■■■"LEFT$(A$,22):G
OSUB400:NEXT
314 A$="                              ■■ ■■= FUEL BONUS":G
OSUB400
315 FORG=1TO20:PRINT"■■■■■■■■■■■■■■■■■■"LEFT$(A$,22)
:GOSUB400:NEXT
316 A$="HIT A KEY WHEN YOU ARE READY TO LOAD PART
2 - "
317 Q$=A$:R$=RIGHT$(A$,45):A$=R$+LEFT$(Q$,1):PRINT
"■■■■■■■■■■■■■■■■■■■■■■"LEFT$(A$,22)
318 GETD$:IFD$=""THENFORT=1TO80:NEXT:GOTO317
319 POKE36869,240:SYS64820
400 W$=A$:E$=RIGHT$(A$,39):A$=E$+LEFT$(W$,1):FORC=
1TO60:NEXT:RETURN
```


TEXAS TI99/4A



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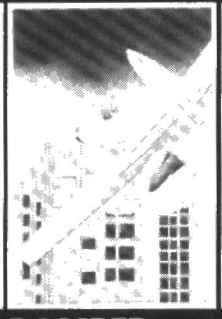

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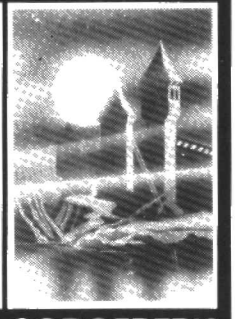

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Scaley monsters

Androids, zombies, vultures . . . your opponents in these games are not a pretty sight. Do the games look better than the monsters? Our reviewers tell you what they thought

Androids Spectrum £5.95

Sunshine Books, Hobhouse Court, 19 Whitcomb Street, London WC2 7HF

Androids is a maze game in which you run down endless corridors to find an exit. Lurking Androids will fire at you if you get in their line of sight unless you shoot and destroy them first.

The encounters use up your stock of lives and fire power but you can restock at points around the maze. You score points for Androids hit and for finding an exit.

A useful option allows the control keys to be reset to your choice; just the thing for joystick users. An unusual feature is the offer by the publishers of cash prizes for high scores.

The maze is extensive and only the part you are in is shown, so a good memory helps. The Androids are not exactly fearsome, but the man is realistic and agile. No speed or difficulty choice is given, but this does not detract from the game. **H.C.**

instructions	80%
playability	90%
graphics	70%
value for money	60%

★★★★

Critters VIC + 8K £5.99

Rabbit, 380 Station Road, Harrow, Middx HA1 2DE

In 1994 vultures have grown to a height of six feet by the novel approach of becoming vegetarians with a weakness for cherries. It is your task as the local cherry baron to protect your valuable crop from the evil birds by "blasting them out of the sky".

This program requires a fairly large memory expansion and I must confess I wondered where it was all used, since the screen display is rather basic.

The graphics and animation of birds and cherries are excellent, with much flapping of wings and swooping of vultures. The player is also very well-drawn especially when a falling or swooping bird knocks him to the ground where he is temporarily stunned.

All in all, however, this game is not outstanding. Although playable, I suspect it could become tedious after a while. Only time will tell. **M.B.**

instructions	70%
playability	70%
graphics	90%
value for money	70%

★★★

Alien Soccer VIC-20 £5.99

Rabbit, 380 Station Road, Harrow, Middx HA1 2DE

Alien soccer is very strange game. It's a little like pinball, with a ball bouncing around among a collection of rather passive aliens off which it veers and plunges into the goal mouth.

Not many games are this boring to play, so it's interesting in its way. The sound effects are quite nice, particularly the clicks and buzzes.

If this is the way aliens play soccer, how come they are so aggressive in other fields? There is no sharp attacking play, in fact no movement at all. Hardly the hyperactive laser-toting killers that we know and love. **T.D.**

instructions	50%
playability	20%
graphics	75%
value for money	13%

★★

Centropods Commodore 64 plus joystick £5.99

Rabbit, 380 Station Road, Harrow, Middx HA1 2DE

The Commodore 64 is proving no slouch when it comes to duplicating arcade games. Centropods is a version of the popular Centipede game.

The playfield consists of a black background populated by purple mushroom-like growths, and the player's white blaster which can be moved freely around the lower part of the screen.

A yellow wriggly 'Centron' comes squirming down, changing direction when it touches a mushroom. It must be destroyed by blasting each of its body segments individually, which causes the creature to split up, each dead segment becoming a new mushroom.

Other hazards include a red spinning 'buzzer' and an orange 'glue pod', both of which can be shot for bonus points. Green rockets drop down spreading more mushrooms, and the action gets more and more frantic as the Centron nears the bottom. **D.A.**

instructions	30%
playability	75%
graphics	69%
value for money	80%

★★★

Zombies and Potholes Jupiter Ace plus 16K

Jupiter Cantab, Cheshunt Building, Bateman Street, Cambridge CB2 1LZ

When you consider how much games software is simply a rehash, it would be nice to be able to give a big welcome to something even slightly different.

This game moves a "man" in flight from voracious zombies. The aim is to manoeuvre a pothole between the man and the zombie, so the latter falls into it and gets deleted. Difficulty level can be changed by varying parameters.

Incredibly on a FORTH machine, this game is rather slow and with eight keys to control it, more or less has to be. If it went faster it could become unplayable, but as it is I soon got bored and tended to let my man fall down the pothole too.

The program then prints an excitingly rude message. Should wow them in the first schools, but not really a program for adults. **G.M.**

instructions	80%
playability	40%
graphics	60%
value for money	40%

★★★

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Keeping it all together

Tidy up your messy micro with these do-it-yourself projects from Vic Rogers

The advertisements for home computers never show all the wiring and paraphernalia that forms part and parcel of the whole system.

With the VIC-20 for example, there is a cable to the cassette recorder, another to the transformer and plug and yet another to the modulator and away to the TV.

An important consideration when buying my VIC was the educational value it would have for my two young daughters. However, on using it the first few times it soon became clear that some tidying up of the leads would have to take place to avoid a disaster.

A long weekend away from the micro in the garage with some ply offcuts and some wood glue soon had a remedy, and my neat storage module for all the VIC bits has proved very successful.

As can be seen in the photo the modulator and power pack are out of sight and held in position by the careful placement of some dowel rods that also help support the top. It is also relatively easy to get access to the back of the computer to plug in RAM packs and cartridges. The space at the side gives access to the on off switch, the control port and, as it happens, is just the right width to store cassettes.

The recorder sits on top and the extra space next to it is usually occupied by a perspex menu holder pinched from the kitchen. I have found this ideal for keeping magazines and instruction manuals in just the correct position to read from while keying in.

Although not shown in the photo, the TV can sit on the top of the module, however, I find it too close to the keyboard for eye comfort.

The module has been in use for about a year and been very useful. Mine is painted in chocolate to contrast with the VIC's cream — very chic! The colour and dimensions could easily be varied to suit any micro.

External dimensions, for a VIC

depth	15.15 ins
width	19.50 ins
height (inc. rubber pads)	5.50 ins
depth of shelf	8.25 ins

Now that I have expanded my system with the addition of a disc drive and printer I have had to resite and rearrange the storage facilities.

I converted a spare bedroom into an office and the micro equipment is now kept on an easily demountable table top. It has to be easily taken apart as the room is needed from time to time for guests.

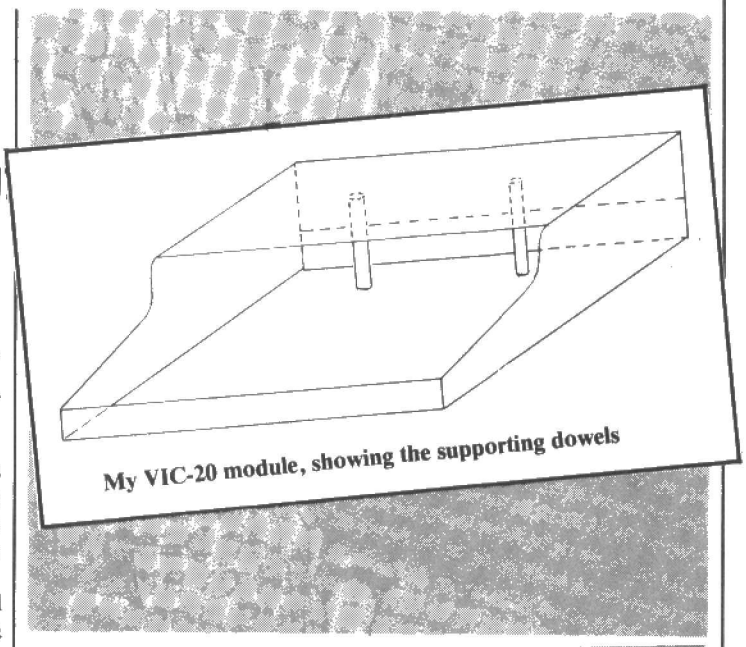
To construct the table top a 6ft batten was screwed to the wall with six dowels projecting from the top. This is made from an old flush door and in one edge six holes were drilled to match the dowels. Two legs made from ordinary 2 × 2 were screwed on the outer side and, Hey Presto — a spacious table top to keep all the equipment.

To complement the table top a small raised platform was built from scrap chipboard to hide most of the cables, and the hole cut in the rear of the door for the power cables to drop through to an extension lead.

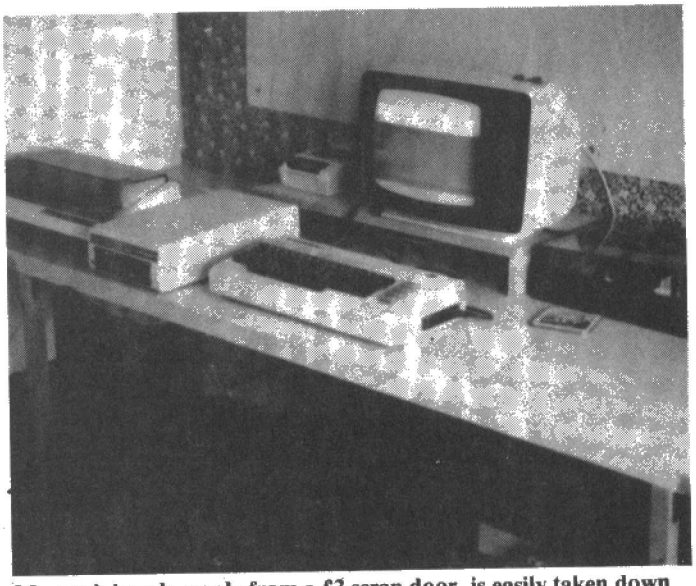
The main cost of the module was in paint and glue and amounted to no more than £1. It has proved strong and handy and has even been used to transport the micro to colleges where I use it as a lecturing aid.

Although the table top is now in use almost daily the module is not redundant as the basic VIC is still put in it if I want to use it with the colour TV downstairs. The cost of the door for the table top was £3 from a demolition site and the other main cost was the extension lead.

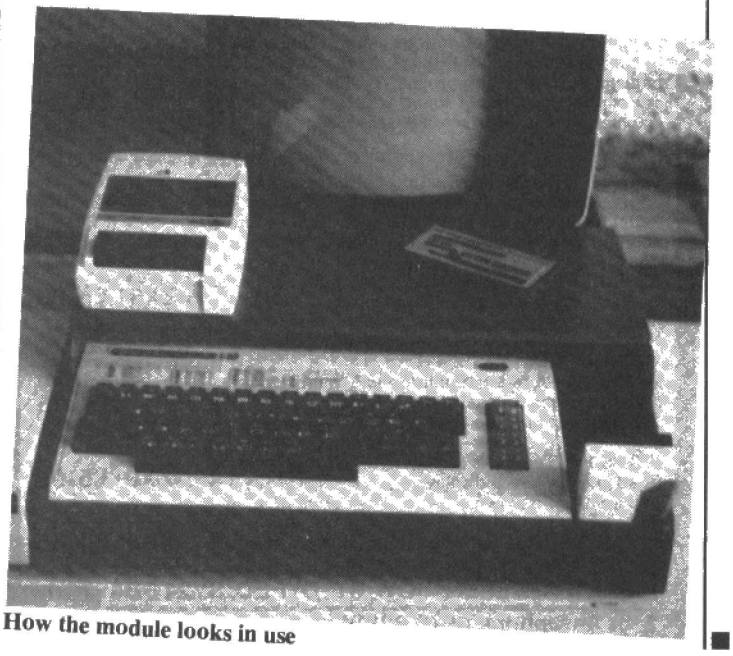
In the photo the door is shown mounted on battens but I hope eventually to smarten it up with some beech screw-in legs.



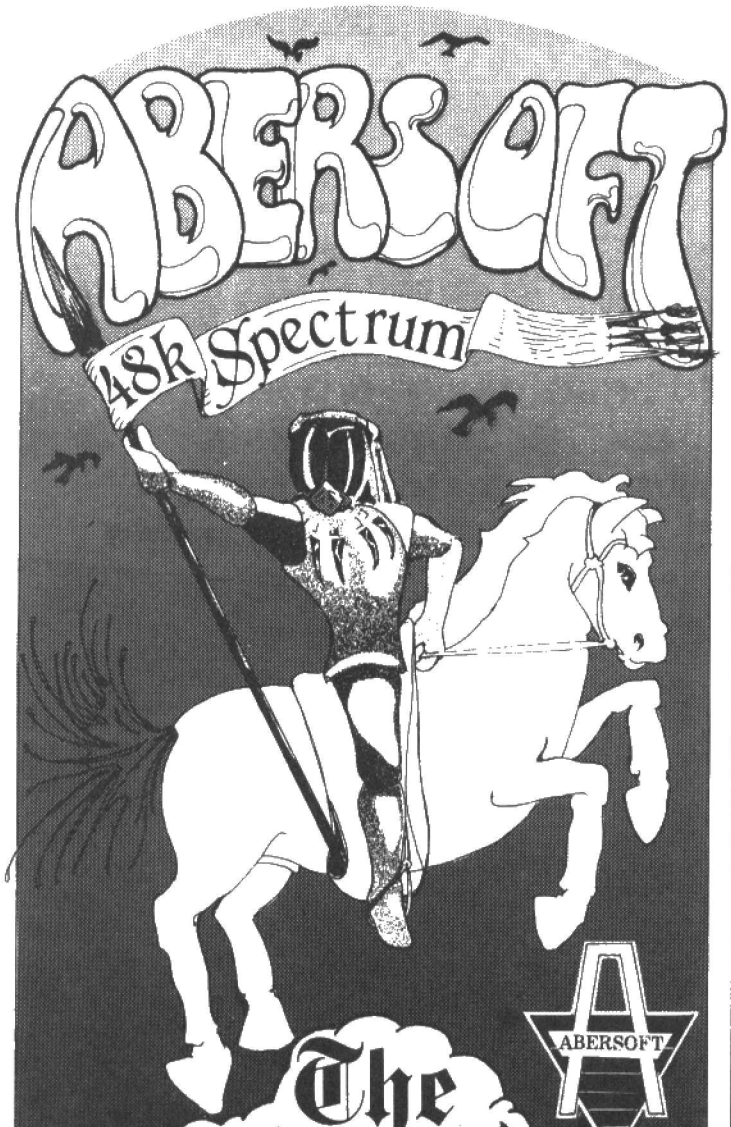
My VIC-20 module, showing the supporting dowels



My work bench, made from a £3 scrap door, is easily taken down when the room is needed



How the module looks in use



THE WIZARD'S WARRIORS: A fast moving game that matches developments in your skill as a player by becoming increasingly more devious. By offering to you the full range of options you can choose how to control your warrior through the maze. A full implementation of this program enables such features as a continuous series of sound effects, arcade quality graphics, double-point scoring, and--for the very artful --bonus lives. **Spectrum £4.95**

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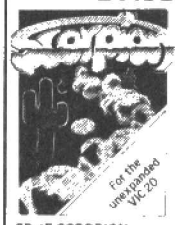

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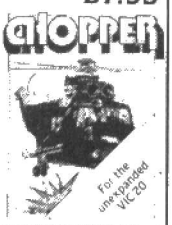

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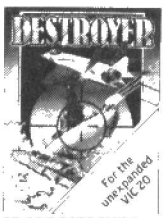

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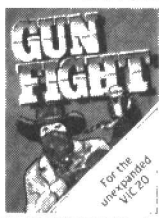

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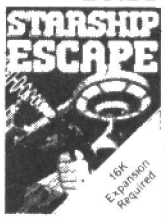

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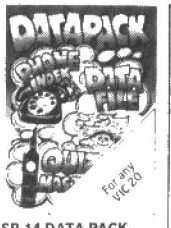

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Trapped! Find the keys before the ghost gets a taste for you

Here's a maze game with a difference — instead of gobbling fruit you have to find keys to unlock the door. But beware of the ghost, says William Mitchell who wrote the program for 16K or 48K Spectrum

You are trapped in a maze with a door at the top left hand corner of the screen.

However, to open the door and escape you must first get the five keys to it which are scattered around the maze.

But a ghost patrols the maze and if he sees you he will sound the alarm and you will be captured and eaten.

The random movement of the ghost may be of particular interest to readers wishing to write "Pacman"-style games. It is in lines 300 to 330.

How it works

90-260 print maze
261-266 position keys
270-280 define variables
300-330 random movement of ghosts
331-470 main programme loop
2000-3001 check to see if ghost has seen man
4000-4020 set up graphics ("A" = man "B" = Ghost)
4030-7000 instructions and replay?
Note: Graphic "a" = man, Graphic "b" = Ghost

Variables

The important variables are:
Y,Z position of ghost
D direction
a,b position of man
e,r used to set up positions of man

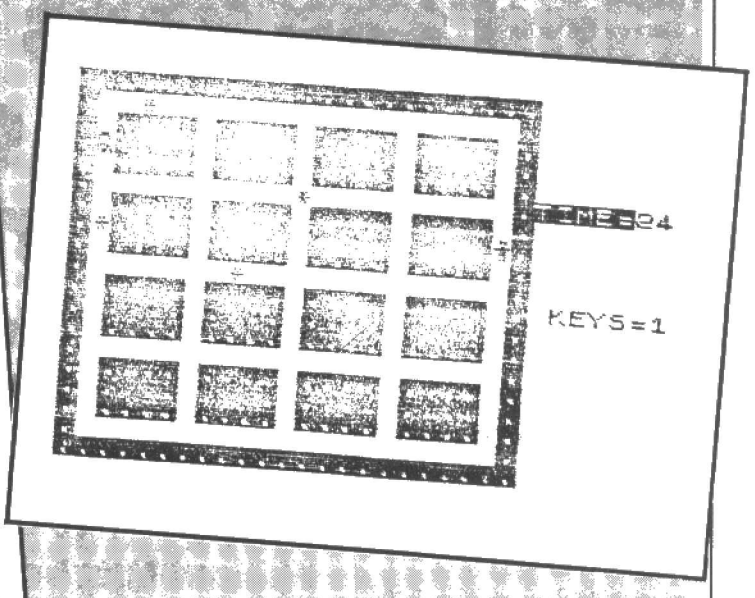
Hints on conversion

The program could easily be converted to the ZX81 if BLEEPs, colour commands (INK, PAPER, BORDER) and user defined graphics were not used (lines 4000-4020).

Also, the screen command would have to be replaced by the PEEK (PEEK 16398 + 256 * PEEK 16399) command.

```
    1 PAPER 1: INK 6: BORDER 2: C
LS
    2 LET d=1
    3 GO SUB 4000
    4 PAPER 7: INK 1: BORDER 2: C
LS
    5 LET h=0
    7 LET q=0
   10 REM "##############
   20 REM "#             #
   30 REM "#             #
   35 REM "#W mitchell#
   40 REM "#             #
   50 REM "# A KEYS A #
   60 REM "#             #
   70 REM "##############
   90 PRINT "■■■
```

```
3000 IF b=1 OR b=6 OR b=11 OR b=
16 OR b=21 THEN CLS : PRINT AT 1
0,10; FLASH 1;" I SEE YOU ": BEE
P 5,0: RUN
3001 RETURN
4000 DATA BIN 00011100,BIN 00010
100,BIN 00001000,BIN 01111111,BI
N 00011100,BIN 00011100,BIN 0001
0100,BIN 00010100
4003 DATA BIN 00111000,BIN 01111
100,BIN 01010100,BIN 01010100,BI
N 11111110,BIN 11111110,BIN 1101
1010,BIN 10010010
4010 FOR v=0 TO 15: READ s: POKE
 USR "a"+v,s: NEXT v
4020 BORDER 2: PAPER 0: INK 7: C
LS
4030 PRINT PAPER 1; INK 4;"
KEYS
4040 PRINT ''''" You must go roun
d the maze "''" and pick up
the keys to get "''" out and
then go to top left "''" corn
er but beware a gohst
patrolls and if he sees you you"
''" will be killed"
5000 INPUT " speed 1-5 ";yy
5050 PRINT AT 21,10;"PRESS ENTER
": PAUSE 0: RETURN
7000 CLS : PRINT AT 10,8;"CONGRA
TULATIONS"''TAB 10;"time=";h: B
EEP 5,5: RUN
```



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Getting it figured

These programs are designed to make learning maths and geometry child's play

Numerons 48K Lynx £9.99

Camsoft, 33a Bridge Street, Cambridge CB2 1UW

Numerons is one of the first programs to become available for the splendid Lynx microcomputer. The producers are to be congratulated in trying to combine an educational function within a game format.

The aim of the game is to fire numbers, between 1 and 9, at invaders which themselves bear numbers.

In the standard option of the game, as the invader makes its way down the screen, it can be destroyed by being hit by a number which divides exactly into the number on the invader. The higher the number fired, the more points are scored.

The numerous variations to the game, such as day and night display, nine levels of difficulty, three arithmetical versions and a system of incentives for achieving high scores, all add up to a game which can be re-played many times without losing interest. **R.S.**

instructions	80%
playability	85%
graphics	90%
value for money	70%

★★★

Number Puzzler VIC-20 plus 8K £8.95

ASK, London House, 68 Richmond Road, London SW15 2RP

This is an improve-your-arithmetic cassette, supposedly for four to 12-year-olds, though I think the stated age range is low at both ends. Six upwards, I'd say, to get value for money from the two games.

On side A is a noughts-and-crosses type game for practicing addition, subtraction or both, using between one and four three by three boards. It gets quite complicated, particularly with four boards to choose from.

Side B has two options — magic squares or self test. In magic squares a three by three board is displayed with three numbers already entered. You complete the rest to give as many rows, columns and diagonals totalling the same value as possible. **B.J.**

instructions	90%
playability	80%
graphics	80%
value for money	70%

★★★

Fracts (Cassette 5) BBC B £8

Cottage Software, Selly Hill, Whitby, Yorkshire

This cassette is supposedly designed to re-inforce 'the understanding of equivalent fractions'. I have my doubts.

You can't select the levels of difficulty. You're simply presented with a problem involving mixed numbers to add, subtract, multiply or divide, with a prompt to tell you how to answer the particular part of the problem posed. This takes the form of YELLOW times GREEN plus WHITE and the numbers of the problem are coloured accordingly.

At first glance this may seem a good idea. But maths is about understanding, not about learning rules, and this program does little to encourage such understanding.

You also have to progress along this same path for each part of the problem. There is no facility to go straight to a right answer.

At the end of eight problems you can play Nim or Tower of Hanoi. **D.C.**

instructions	60%
playability	30%
graphics	30%
value for money	20%

★★

Happy Math TI-99/4A £8

Micro Leaf Microwave, from Stainless Software, 10 Alstone Road, Stockport SK4 5AH

Any educational game which gets children interested in solving arithmetical problems, is, in my view money well spent, Happy Math is aimed at youngsters who are just starting to work with figures and the problems are therefore fairly simple.

The child can choose to carry out addition or subtraction at three levels, easy, harder and hardest. The thing I liked most about this program was the excellent use of graphics. If the correct answer to a problem is input, you are presented with a smiling face and two hands, one of which waves at you.

Symbols such as aeroplanes, ships and steam engines appear on the screen to demonstrate how the answer is arrived at, for example, four aeroplanes followed by six sailing ships. **D.B.**

instructions	n/a
playability	80%
graphics	90%
value for money	90%

★★★★

Shape Up VIC-20 plus 16K £8.95

ASK, London House, 68 Richmond Road, London SW15 2RP

Shape Up gives practice in using the four basic geometric shapes — circle, square, triangle and rectangle — plus a concept of large and small. It's aimed at kids of three and upwards, but I doubt if the "upwards" would extend much past five or six.

There are five different sections, all on some aspect of matching shape and/or size. Two ask you to match a shape with one of two choices by setting the points in a railway siding; in one a burglar steals one of the shapes and you identify which one is missing (harder than it sounds).

Two coloured shapes generated at random to match a set of outline shapes. Though you fill the outlines quite quickly, the last couple can take ages — one of the few poor design features in an otherwise well-thought-out program. **B.J.**

instructions	75%
playability	70%
graphics	80%
value for money	70%

★★★

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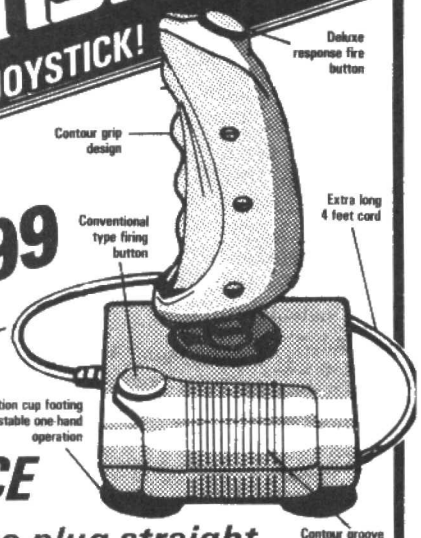

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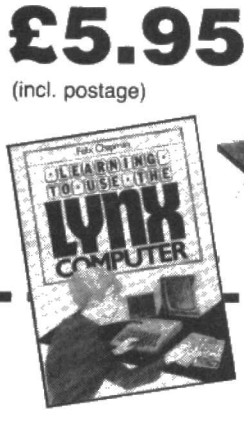

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READ-OUT

Don't panic — it's simple to Interrupt

More programming advice from our Atari expert Marc Freebury. Here he shows how to use the Vertical Blank Interrupt

If you shudder at the mention of machine code, or fall faint at the word assembler don't panic — this is for you too.

The term interrupt is often the cause of much confusion to the novice machine code programmer, which is unnecessary, since the interrupt is a very simple concept.

Imagine sitting at a desk, writing. Someone asks you a question. You halt your present task, determine who asked the question and formulate a reply. You then return to your previous work.

That is the simplest outline of an interrupt — a request made on the CPU by some external event to gain the CPU's attention. The CPU will halt its task at a convenient moment, do the required work and continue processing. Using this technique it is possible to run two programs simultaneously, although a lot of restrictions apply and a lot of work must be done.

On the Atari, an interrupt is generated every time the screen is refreshed (every 50th of a second, British standard). During this time the CPU attends to such tasks as updating the user clock.

What? You mean you don't know about the clock? Well, strictly speaking it isn't a clock but a machine counter. It counts up by one every time the interrupt routine is passed through. On American machines this is every 60th of a second, and is therefore useful. On our system, you have to do a bit of conversion to get the right figure.

The clock uses memory locations 18 to 20, high to low. So, assuming that it is accurate, the following should demonstrate it:

Run over five minutes, the inaccuracy averages 0.5 seconds, which is usually more than accurate enough for games.

Back to our main theme. The VBI, aside from doing all this, can be made to pass through a routine of your own devising before continuing on to its own. This is obviously very attractive, since it will run independent of your main program and will apparently run without loss of performance. However — surprise surprise — there are restrictions.

First, the time available is limited. Second, although you won't notice it with small routines, any increase in the size of the VBI means a proportionate decrease in overall processing time. Put simply, you try plotting an entire screen every time and your program will slow to a crawl.

```
100 GRAPHICS 0:SETCOLOR 2,0,0:POKE 752,1:POKE
18,0:POKE 19,0:POKE 20,0
110 POSITION 7,0:?"HRS","MIN","SEC"
120 TIME = PEEK(20) + 256*PEEK(19) + 65536*PEEK(18):
TIME = TIME/50
130 MIN = INT(TIME/60):TIME = TIME-MIN*60
140 HRS = INT(TIME/60):TIME = TIME-MIN*60
150 SEC = TIME
160 POSITION 7,2:? HRS,MIN,SEC;"(2 spaces)"
170 GOTO 120
```

VBI, and if it is too long it will cause screen difficulties. The second, called a Deferred VBI can be much longer and extends into the redrawing of the screen when changing graphics registers would be unwise.

Once you have determined which category your routine fits into, load the accumulator with 6 for immediate, 7 for deferred. When your routine is complete, it **must** finish with a jump to complete the VBI — i.e. doing the machine's general tidy up. For a deferred VBI, that jump must be to E462 but for immediate it must be to E45F.

As a simple demonstration of VBI processing power, try typing in this BASIC example:

```
10 RESTORE
20 DATA 165,88,24,105,16,133,0,165,89
30 DATA 133,1,160,0,185,37,6,145,0,200
40 DATA 192,5,208,246,76,98,228,104,162,6
50 DATA 160,0,169,7,32,92,228,96
60 DATA 10,54,34,41,10
70 FOR I = 0 TO 41:READ A:POKE 1536 + I,A:NEXT I
80 X = USR(1562)
```

To implement a VBI, you have to change the interrupt vector. As this vector is being passed through 50 times a second (approximately), a couple of BASIC POKES will not suffice. The vector is located at hexadecimal address 222, decimal 544. We change it using a special operating system subroutine, which must be called by machine code. The routine to do this is:

```
LDX # $06
LDY # $00
LDA # $07
JSR # $E45C
```

This will cause a VBI extension, located at 600 hex (1536 decimal), to be incorporated. Of course, we have to put the routine there first. You might wonder about the values in the registers.

The 06 is the high byte of the address, the 00 is the low byte. The 07 is special. This is because there are two types of VBI. The first is limited to the actual screen blank time and is far shorter in length.

It is known as an immediate

For those who can't read decimal translations of hex code (ie everyone) this might help explain what's happening:

1 Take the top left corner of the screen and add 16 to centralise.

2 Loop, moving the string *VBI* to the screen.

3 Return to normal VBI.

Then comes the installation routine, which puts up the vector as previously described. Lastly comes the ATASCII codes for the string *VBI*.

As this piece of code is occuring every 50th of a second, you will find it impossible to remove the string from the top of the VDU, no matter what you do — even if you LIST or even RUN another program.

To be truthful, you will need to be a machine code person to get the most out of the VBI. Most professional games will use it. However, with such facilities just out of reach, perhaps this is the encouragement some people need to dip their toes in the world of machine code.

You'll need fast fingers to squash the red columns

Electro looks simple but we reckon it's well-nigh impossible to beat. Type Margaret Norman's game into your Dragon and take up the challenge

My original game for the Dragon involves moving a green square around the screen to squash down columns of red squares coming up from the bottom.

At first there are one or two columns of red squares, depending on the level of difficulty selected, but more appear at regular intervals until there are 10 altogether.

The game is a bit like plate spinning — you have to keep dashing backwards and forwards to keep them all under control.

The program is written entirely in BASIC, but is fairly fast as low-resolution graphics are used for the main part of the game.

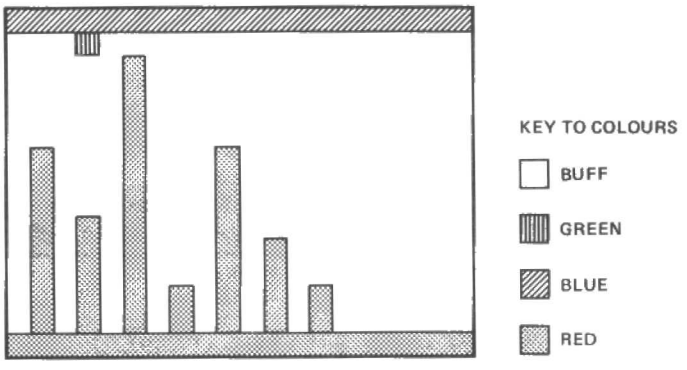
The routine to move the green square uses keyboard PEEKs; this means the square will keep moving as long as you keep your finger on the appropriate key, but you must make sure you release each key before pressing the next or the change of direction will not register.

Each sideways move is of three squares — from one red column to the next — upwards moves are all two squares, but the green square moves only one square at a time downwards so that the red columns are erased.

It is possible to move sideways onto the top square of a red column, but not through the middle of one.

The score depends on the number of red columns on the screen, so it goes up slowly at first then increases rapidly as the game progresses. There is a high-score table routine at the end of the program, which could easily be adapted for other games.

There is also a title sequence — buff lines are drawn at random on a black screen, then the word Electro is drawn in the centre in black on a buff rectangle, and a short signature tune is played. This can be omitted if you wish.



How Electro looks on the screen

Variables
X1,X2,Y1,Y2 co-ordinates of ends of random lines of title sequence
L level of difficulty
I,J,K,M,N,F loop counters
W(I) location of top of column I
S score
Z No. of columns on screen
DL delay loop counter
XG,YG co-ordinates of green square
K No. of column being erased
HS(I) high score
NS(I) names of high scorers
QS Y/N input

```
10 REM ELECTRO
20 REM BY MARGARET NORMAN
30 PCLEAR 8
40 CLS0
50 PMODE4,1:PCLS0
60 LINE(25,175)-(108,108),PSET:LINE-(76,96),PSET:L
INE-(200,20),PSET:LINE-(150,96),PSET:LINE-(160,108
),PSET:LINE-(25,175),PSET
70 PAINT(110,110),5,5
80 PMODE4,5:SCREEN1,1:PCLS0
90 LINE(60,65)-(196,130),PSET,B:PAINT(62,67),5,5
100 FOR I=1 TO 40
110 X1=RND(255):X2=RND(255):Y1=RND(191):Y2=RND(191
):LINE(X1,Y1)-(X2,Y2),PSET:SOUND255,1:NEXT I
120 DRAW"BM72,77;C0;NR12D22NR12D22R12BR16L12U44BR2
8L12D22NR12D22R12BR16L12U44R12BR4R12L6D44BR10U44R1
2D22L12R6F6D16BR4U44R12D44L12"
130 PLAY"T10V31O2GFEDDEDGFEDDD"
140 REM INSTRUCTIONS
150 CLS:PRINT@40,"INSTRUCTIONS":PRINT
160 PRINT"TRY TO STOP THE RED WIRES FROM  REACHING
 THE BLUE TERMINAL TO   COMPLETE THE CIRCUIT."
170 PRINT"MOVE THE GREEN TERMINAL WITH THEARROW KE
YS."
180 PRINT"LAND ON TOP OF A RED WIRE, THEN MOVE DOW
N TO SQUASH IT."
190 PRINT
```

How it works
50-70 draw 'flash' to be displayed at end of game
80-130 title sequence
140-190 instructions
200-210 select level of difficulty
220-240 initialisation
250-260 put row of red squares at bottom of screen, and row of blue squares at top
270-280 establish start positions of red columns
290-450 main game section
470-500 display 'flash'
510-620 high score routine
630-650 replay option, END
660-720 subroutine to move green square

Hints on conversion

Converting this program to run on a different computer is fairly difficult, as it uses high-res. graphics commands specific to the Dragon — for the title sequence and 'flash' — and quite a lot of PEEKs and POKEs.

If you want to try, it would be best to completely re-write the title and 'flash' sequences to suit your machine.

The Dragon does not require the use of LET, or of GOTO after THEN, so these would have to be inserted where necessary.

CLS clears the text screen; the number following it indicates the background colour. 0 is black, 5 is buff. Similarly, PCLS clears the high-res. screen.

The memory locations for the text screen start at 1024 (for the top left-hand corner), and the screen has 32 columns and 16 rows.

CHR$(143) is a green square; CHR$(175) is a blue square; CHR$(191) is a red square, and CHR$(207) is a buff square.

PLAY "03BAG" produces a short scrunching sound, and PLAY"04CC" produces a fairly high pitched beep. (The tempo and volume for these are set in line 220: PLAY"T250V31").

All text is printed in black on a green background. In the high-scores routine, the lines of text are interspersed with red lines (PRINT STRING$(32,191) produces a red line).

Locations 341 to 344 are keyboard buffers; a value of 223 in one of these indicates one of the cursor keys is depressed.

DRAGON PROGRAM

```
530 INPUT"HIGH SCORE:WHAT IS YOUR NAME  ";N$(5)
540 HS(5)=S
550 FOR J=5 TO 2 STEP -1
560 IF HS(J)<=HS(J-1) THEN 580
570 T=HS(J-1):T$=N$(J-1):HS(J-1)=HS(J):N$(J-1)=N$(
J):HS(J)=T:N$(J)=T$
580 NEXT J
590 PRINT STRING$(32,191);:PRINT TAB(8);"HIGH SCOR
ES"
600 FOR I=1 TO 5
610 PRINT N$(I);TAB(20);HS(I)
620 NEXT I
630 PRINT@454,"ANOTHER GAME (Y/N)";:INPUT Q$
640 IF Q$="Y" THEN 140
650 END
660 POKE(1024+XG+32*YG),207
670 XG=XG+3*(PEEK(343)=223 AND XG>3 AND PEEK(1021+
XG+32*(YG-1))<>191)-3*(PEEK(344)=223 AND XG<28AND
PEEK(1027+XG+32*(YG-1))<>191)
680 YG=YG+2*(PEEK(341)=223 AND YG>2)-(PEEK(342)=22
3 AND YG<14)
690 IF PEEK(1024+XG+32*YG)=191 THEN K=INT((XG+1.1)
/3):W(K)=W(K)+32
700 IF PEEK(1024+XG+32*YG)=191 THEN PLAY"O3BAG"ELS
E PLAY"O4CC"
710 POKE(1024+XG+32*YG),143
720 RETURN
```

```
200 INPUT"LEVEL OF DIFFICULTY (1 OR 2)";L
210 IF L<>1 AND L<>2 THEN 200
220 PLAY"T250V31"
230 CLS5:S=0
240 XG=20:YG=2
250 FOR I=0 TO 31
260 POKE(1024+I),175:POKE(1024+I+480),191:NEXT I
270 FOR J=1 TO 10
280 W(J)=1024+479+3*J:NEXT J
290 FOR I=L TO 50
300 FOR K=1 TO 2
310 FOR M=1 TO 2
320 FOR N=1 TO 2
330 IF I<11 THEN Z=I ELSE Z=10
340 FOR J=1 TO Z
350 W=W(J)-32
360 IF PEEK(W)<>143 THEN POKEW,191:W(J)=W:IF PEEK(
W-32)=175 THEN 460
370 GOSUB 660
380 S=S+5*Z
390 NEXTJ
400 IF I>1 THEN GOSUB 660
410 NEXT N
420 IF I>3 THEN GOSUB 660
430 NEXT M
440 IF I>8 THEN GOSUB 660
450 NEXT K,I
460 FOR DL=0 TO 100:NEXT DL
470 PMODE4,1
480 FOR F=1 TO 3
490 SCREEN1,1:PLAY"O5BAGFE":FOR DL=0 TO 100:NEXT:S
CREEN1,0:PLAY"O5EFGAB"
500 NEXT F
510 CLS4:PRINT@32,"          YOU SCORED ";S
520 IF S<=HS(5) THEN GOTO 590
```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Games invasion

Can you fight off the hostile invaders? Would you even want to? Our reviewers assess a selection of action games

Myriad 3K £5.99

Rabbit, 380 Station Road, Harrow HA1 2DE

How does the idea of 15 aliens and 99 levels of play grab you? Without doubt this is the best invaders type game on the market for the VIC and possibly for any other micro.

To say that Myriad is another form of Invaders would be to do it a gross injustice. The fifteen different forms of attacker require different strategies to defeat them, and there are always more to come.

Try as I might, I could not get above level 36, and even this required hours of practice and left me with an aching thumb.

Graphics and colour are excellent, an expanded screen is used, animation is smooth and very, very fast.

At the bottom of the screen is a display of high score, present score, number of lives left, number of shields left and level of play. The shields can be extremely useful as they allow you to ram any particularly troublesome aliens with impunity.

The use of the VICs sound capabilities is also excellent (unlike most other Rabbit games), with different aliens emitting different alien-like noises.

Undoubtedly the best space game available for the VIC, and at a reasonable price as well.

M.B.

instructions	70%
playability	99%
graphics	99%
value for money	95%

★ ★ ★ ★ ★

Matrix plus 8K £6.00

Llamasoft, 49 Mount Pleasant, Tadley

This is an upgraded version of Llamasoft's Gridrunner in which you pilot a space ship on a grid and try to destroy invading nasties.

These take the form of segmented droids and cosmic cameloids (Freud would have something to say about that). A collision with a nasty results in death and they occasionally bomb you.

There are all sorts of other things going on and other ways of dying. On the whole the scenario is nicely complex and each screen offers new variants.

The use of sound and colour are good and the animation and graphic effects brilliant. The program offers some unusual extras such as screen centering, a pause option, and the ability to omit any of the first six screens if they are too easy.

On the whole I have mixed feelings about this offering. On one hand it is the best arcade game I have had the pleasure of reviewing. It is however, a bit hard on owners of Gridrunner to bring out an updated version. Perhaps an exchange deal could be offered to owners of the mark I game.

Anyhow, if your VIC has enough memory, pawn your soul and get this game....I don't think you'll regret it.

instructions	80%
playability	85%
graphics	95%
value for money	100%

★ ★ ★ ★ ★

Space Phreeks £5.99

Rabbit, 380 Station Road, Harrow HA1 2DE

Another shoot-the-alien type, but more interesting than many due to the complex steering geometry of the mutant hordes therein. Looking like little apples, butterflies and monsters, they swirl and loop across the screen.

I enjoyed this game, as I enjoy many shoot-the-alien games. But I already own a couple of very good shoot-the-alien games, and I doubt if I would actually want to buy this one — after all, I wouldn't like to get too many of them.

Rabbit pack their cassettes in fancy boxes without inlay cards, which is a little tiresome of them as the instructions soon become separated from the game.

In this case, it's not a great problem as few instructions are needed as are given. The whole thing is just a touch predictable

T.D.

instructions	50%
playability	50%
graphics	80%
value for money	60%

★ ★ ★

Xerus £4.99

Electronic Leisure, 11 Sherwood Close, Christchurch, Dorset BH23 2DD

Although you would think it impossible, here is yet another variant on the Invader theme. You control a laser base which moves along the bottom of the screen, and with which you endeavour to repulse waves of invaders.

The aliens move from top to bottom and generally drop bombs on you. If they reach the bottom of the screen they change into time bombs which will destroy you if you are in range.

If you complete a wave of invaders, a new lot of nastier ones appear. As usual you try to last as long as possible with your allocated (four) lives.

The quality of graphics and animation were fair but the sound effects were annoying in the extreme.

The game uses a standard two-stage load and starts with a nice detailed description of the controls and the meaning of the various items displayed during play. Other authors should take heed.

A.W.

	90%
instructions	80%
playability	70%
graphics	70%
value for money	

★ ★ ★ ★

Games Compendium 01 48K Oric-1 £7.95

Salamander, 27 Ditchley Rise, Brighton BN1 4QL

Four all-BASIC games appear on this compendium; Donkey Derby, Viper, Kingdom, and Space Station. The two arcade-style games. Viper and Space Station are very slow, so they provide only limited enjoyment.

In Viper, you move a snake around the screen picking up numbers, while trying to avoid obstructions or falling off the edge of the screen.

The object of Space Station is to dock a space capsule. You control the capsule's direction in three dimensions, avoiding the meteors.

Kingdom is an old microcomputer standard in which you play the part of an emperor of a small state. No graphics are used, but the text is Gothic style — a nice touch.

Donkey Derby is a game for several players. You bet on the outcome of a race between six donkeys. This is the best game of the four for graphics and sound effects, but is still unremarkable.

The cassette is well-packaged, but the standard of the programs is reminiscent of those available in the early days of the ZX81 — poor!

D.N.

instructions	50%
playability	40%
graphics	30%
value for money	40%

★ ★

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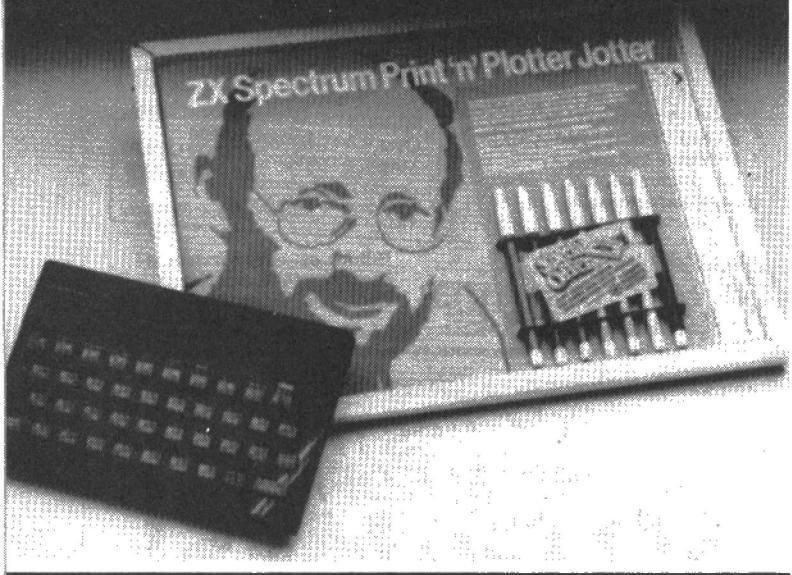

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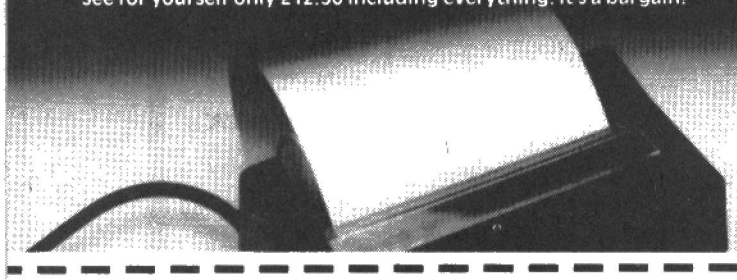

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Use your TI to name the day

You can stay one jump ahead with Alan Blundell's calendar program for the TI-99/4A

Hints for conversion

TI BASIC makes use of a number of unusual statements, such as CALL CLEAR (equivalent to CLS), CALL SCREEN(X) which produces a specified screen colour, CALL COLOR(ASCII code-group, foreground colour, background colour), CALL HCHAR (row, column, ASCII code, number of repetitions), which repeats a specified character horizontally on screen and CALL VCHAR(,,,) which is similar but repeats vertically.

These statements are of cosmetic use only in this particular program; they do not materially affect its operation and can be removed or replaced to taste.

The remainder of the program is in fairly standard BASIC and should present no difficulties, with the exception of the "print at" subroutine (lines 930-980), which is used in displaying the calendar.

If your BASIC has a PRINT AT command statement, then this can be used to replace the subroutine directly.

The screen location (ROW) at which Q$ is to be printed is specified by the first two characters of the string (the screen column starting point should be identical in each case). If not, a screen POKE may be used to replace the CALL HCHAR line in the existing subroutine.

Variables

MONTH$ (1-12) string array containing the names of the months, January to December

MLEN (1-12) array containing the lengths of the 12 months

M$ single string containing the dates 1-31, suitably spaced for 32-column screen display

Y year for which calendar is chosen

M month for which calendar is chosen

F first day of month M, numbered 1(Sunday) to 7(Saturday)

Q$ string segment forwarded to 'print at' subroutine

A,B loop control variables

K ASCII code to key pressed

S 'Call Key' status variable

```
100 REM  ***CALENDAR***
110 REM  BY ALAN BLUNDELL
120 REM  INITIALIZATION
130 DIM MLEN(12),MONTH$(12)
140 FOR A=1 TO 12
150 READ MLEN(A),MONTH$(A)
160 CALL COLOR(A,1,1)
170 NEXT A
180 DATA 31,JANUARY,28,FEBRUARY,31,MARCH,30,APRIL,31,MAY,30,JUNE,31,JULY,31,AUGU
ST,30,SEPTEMBER,31,OCTOBER
190 DATA 30,NOVEMBER,31,DECEMBER
200 M$="1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  1
9  20  21"
210 M$=M$&"  22  23  24  25  26  27  28  29  30  31"
220 IF FLAG=1 THEN 360
230 REM  TITLE SCREEN &INPUT
240 CALL SCREEN(5)
250 PRINT :::::::::::::::::::"****************************":::TAB(11);"CALENDAR":
"****************************"::
260 PRINT :::"PLEASE TELL ME THE YEAR AND MONTH FOR WHICH YOU WISH TO SEE A CALEN
DAR.":::::
270 FOR A=1 TO 8
280 CALL COLOR(A,2,16)
290 NEXT A
300 INPUT "YEAR ?          ":Y
310 PRINT :::
320 INPUT "MONTH? (1-12) ":M
330 IF (M<1)+(M>12)THEN 320
340 PRINT :::"THANK YOU, GUV..."
350 REM   WORK OUT 1st DAY OF MONTH M, YEAR Y
360 F=Y+INT(Y/4)-(M<3)*(Y/4=INT(Y/4))
370 FOR A=1 TO M-1
380 F=F+MLEN(A)
390 NEXT A
400 F=F-7
410 IF F>7 THEN 400
420 REM   WORK OUT 1st DAY OF       MONTH M & ITS LENGTH
430 IF (M=2)*(Y/4=INT(Y/4))THEN 470
440 IF M=2 THEN 460
450 IF (M=4)+(M=6)+(M=9)+(M=11)THEN 480 ELSE 490
460 M$=SEG$(M$,1,110)&"    "
470 M$=SEG$(M$,1,114)&"    "
480 M$=SEG$(M$,1,118)
490 M$=SEG$("
500 M$=M$&"                                  ",1,(F-1)*4+2)&M$
510 REM  DISPLAY CALENDAR
520 CALL CLEAR
530 CALL COLOR(9,11,11)
540 CALL COLOR(3,9,16)
550 CALL COLOR(4,9,16)
560 PRINT :::::
570 PRINT :::::::::::::::::::"PRESS ANY KEY TO RESTART.   PRESS PROC'D FOR NEXT MO
NTH.PRESS BACK FOR LAST MONTH."
580 CALL HCHAR(1,3,99,28)
590 CALL HCHAR(5,3,99,28)
600 CALL HCHAR(20,3,99,28)
610 CALL HCHAR(21,3,99,28)
620 CALL VCHAR(1,3,99,21)
630 CALL VCHAR(1,31,99,21)
640 Q$="03 CALENDAR.  "&MONTH$(M)&"   "&STR$(Y)
650 GOSUB 940



660 Q$="07 SUN MON TUE WED THU FRI SAT"
670 GOSUB 940
680 Q$="09"&" "&SEG$(M$,1,27)
690 GOSUB 940
700 FOR A=1 TO 5
710 Q$=STR$(9+2*A)&" "&SEG$(M$,A*28+1,27)
720 GOSUB 940
730 NEXT A
740 REM  WAIT FOR NEXT CHOICE
750 FLAG=0
760 CALL KEY(0,K,S)
770 IF S=0 THEN 760
780 CALL SOUND(99,110,0)
790 IF K=12 THEN 810
800 IF K=15 THEN 870 ELSE 200
810 M=M+1
820 FLAG=1
830 IF M<13 THEN 200
840 M=1
850 Y=Y+1
860 GOTO 200
870 M=M-1
880 FLAG=1
890 IF M>0 THEN 200
900 M=12
910 Y=Y-1
920 GOTO 200
930 REM  'PRINT AT'
940 FOR B=4 TO LEN(Q$)
950 CALL HCHAR(VAL(SEG$(Q$,1,2)),B,ASC(SEG$(Q$,B,1)))
960 NEXT B
970 RETURN
980 END
```

Key in my program and you can work out the day you were born on, or what day Christmas Eve will fall on in 1997.....

The program makes use of simple string-handling techniques to produce a calendar for any month of any year and is designed to be quick and easy to use. It is fairly compact and uses only about 3¼K of RAM when run.

A title screen asks the user to INPUT the year and month (1-12) for which a calendar is required. This screen is displayed while details of the calendar for the given month are calculated.

The calendar is prepared from a string representation of the dates 1-31 held in M$ and arrays which hold details of the names of the months (MONTH$(X) and the number of days in each month (MLEN(X)).

Once calculation is complete, the screen is cleared and a calendar display screen is generated. M$ is then used via a short "print at" subroutine to display the dates on the screen.

An interesting feature of this program for beginners lies in the use of the keys on the top of the TI's keyboard for PROC'D (ASCII code 12, key functions 6) and BACK (ASCII code 15, key function 9). These functions allow the user of the program to select the calendar for the month following or preceding that currently being displayed, respectively.

Note, however, that these functions are software defined — that is, their operations is made possible by program lines, in this case lines 790-920.

In fact these functions could be assigned to any key on the console, with the exception of BREAK (function 4) and CLEAR (function =).

See page 8-10 of the TI User's Reference Guide and the TI Basic Reference Card for further details of function key codes.

When keying in lines 200 and 210, note that the spaces left between the numbers 1-31 are vital to ensure the correct display of the calendar. There must be three spaces between 1 and 2, two spaces between 10 and 11, and so on.

By the way, the program is based on the Gregorian calendar — so it won't work for dates before 1582!

How it works

130-210 initialization of M$ and arrays MONTH$(X) and MLEN(X)

240-340 title screen and input of year (Y) and month (M)

360-410 work out first day of given month

430-500 align dates of given month with days of the week and remove excess dates

520-670 build up calendar display screen

680-730 insert dates into calendar

750-920 choice of next calendar to be displayed

930-980 "print at" subroutine

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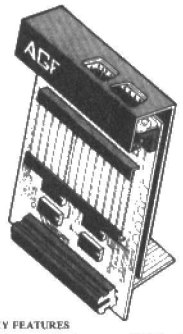

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Have a think on these

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Moo & Hangman
Jupiter Ace
£5.95

Jupiter Cantab, Cheshunt Building, Bateman Street, Cambridge CB2 1LZ

Actually Hangman comes first, despite what it says on the card. This is an effective interpretation of the popular spelling game, for two players, in which you are liable to get hanged more rapidly than in, for example, the PET version which has been around for years.

The graphics, however, are rather imaginative, for if you win the little man leaps free from the scaffold, saved in the nick of time! If you lose, the trap doors ominously — a nice little novelty.

Moo is another old favourite, in which you guess a four digit number the computer randomly chooses. You input a four-digit gues and are told how many bulls (correct digits correctly placed) and cows (correct digits in the wrong place) your entry merits, and you carry on until your guess is right. **G.M.**

instructions	65%
playability	80%
graphics	85%
value for money	85%

★ ★ ★ ★ ★

Dallas
48K Oric£7.95

CCS, 14 Langton Way, Blackheath, London SE3 7TL

Despite being loosely based on the TV programme of the same name, the game has no fast moving deals, requires little financial skill, and failed to provide much excitement or enjoyment.

The program is recorded twice on the cassette, at fast and slow speeds. Despite several attempts, the program failed to load at the fast baud rate. At the slow rate the program loaded with several errors. These errors I had to correct to allow the game to be played.

The aim is to try to make a large profit in the oil business by buying plots of land, drilling for oil,

A balance sheet and information on cash flow are displayed on the screen to help you with your decisions.

There are several bugs in the program (e.g. pressing an alphabetic key when a numeric input is required is not rejected).

In business terms too, I felt the game was ill-judged. **D.N.**

instructions	60%
playability	30%
graphics	70%
value for money	20%

★ ★

Brain Strain
Commodore 64 £9.95

ASN, 17 Adelphi Crescent, Hayes Park UB4 8LY

Fans of the board game Mastermind will be eager to play this version for the 64.

After several pages of instruction, the display is divided into three parts. The top left section gives a list of colours with their correspondig keys, while in the lower left is an explanation of the black/white scoring system.

The right half is the board itself, numbered in rows 1-10, and by pressing appropriate keys, your guesses as to each colour in the secretly chosen code is displayed by a circle of that colour.

The number of correct pegs, etc is given after each row entered. If you are successful, the 64 will play a "Congratulations" tune, while an unsuccessful attempt is met by a dismal note, each time accompanied by flashing displays.

This is a very professional and well-written piece of software which gives the conventional Mastermind game new appeal. **D.A.**

instructions	80%
playability	65%
graphics	65%
value for money	60%

★ ★ ★ ★

Farmer
TI-99/4A £3

Stainless Software, 10 Alstone Road, Stockport, Cheshire SK4 5AH

If eating sandwiches, lying in bed and looking for markets are what you consider the vital ingredients for an exciting game, then you will enjoy Farmer. I was bored after 10 minutes.

You have six commands at your disposal with which to direct the game, its objective being to accumulate $30,000. Each command used reduces your rest and sustenance, so visits to the market must be frequently punctuated by instructions to eat and sleep.

If you don't starve or die through insomnia then the most you can look forward to is finding an extra sandwich, being bitten by dogs, having money stolen or your livestock rustled.

Each game starts with a quick burst of "Old MacDonald", but there are no graphics. Variety is provided by a few changes in screen colour.

Overall — very unimpressive.

instructions	90%
playability	20%
graphics	n/a
value for money	20%

★ ★

Airline
48K Oric £7.95

CCS, 14 Langton Way, Blackheath, London SE3 7TL

The object is to direct the financial affairs of a small airline with the aim of building assets to £30 million in seven years.

Colour, sound, and graphics are combined well to give you the information you need,

However, the program is let down by its limited instructions.

Although there was supposed to be an option to buy and sell aircraft, this never appeared in the games I played

Profit and loss accounts and balance sheets are produced at great speed, but there is no information on how these figures were derived, or advice on what you are doing wrong

So, for the business student there is little that might be learnt by playing this game, for those with little business knowledge, then the game will probably just confuse and frustrate you.

instructions	30%
playability	30%
graphics	80%
value for money	30%

★ ★

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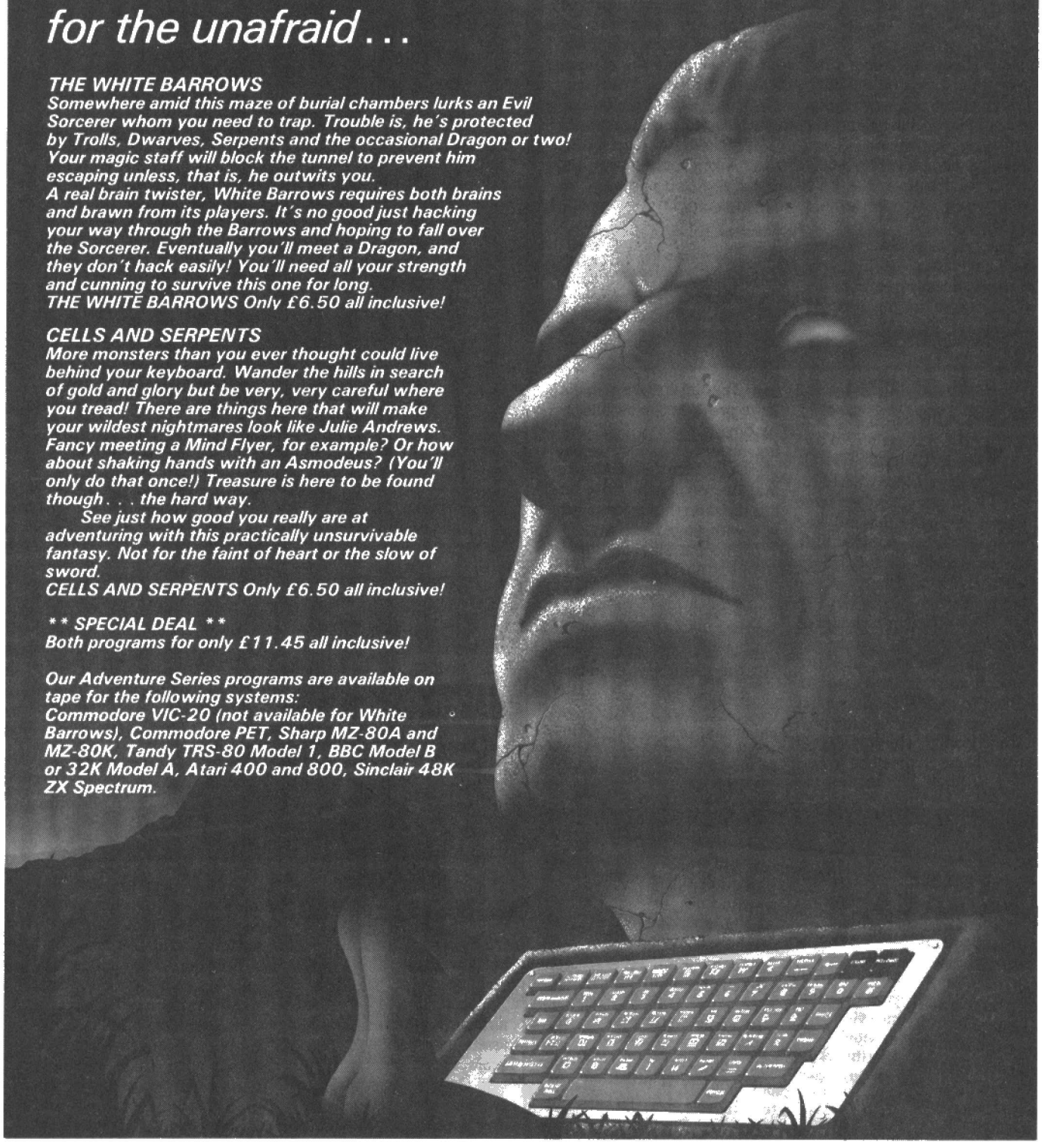

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CHARTS

Top Ten programs for the Dragon-32

1	The King	Microdeal (1)
2	Space Wars	Microdeal (3)
3	Talking Android Attack	Microdeal (2)
4	Planet Invasion	Microdeal (8)
5	Nightflight	Salamander (4)
6	Katerpillar Attack	Microdeal (7)
7	Dragon Trek	Salamander (9)
8	Madness & Minotaur	Dragon (–)
9	Chess	Dragon (–)
10	Dragon Trek	Wintersoft (5)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the VIC-20

1	Arcadia	Imagine (1)
2	Cosmiads	Bug Byte (5)
3	Wacky Waiters	Imagine (3)
4	Panic	Bug Byte (4)
5	Asteroids	Bug.Byte (2)
6	Race	Commodore (–)
7	Amok	Audiogenic (8)
8	Blitz	Commodore (–)
9	Alien Blitz	Audiogenic (9)
10	Kaktus	Audiogenic (7)

Compiled by Boots. Figures in brackets are last week's positions

Top Ten programs for the Spectrum

1	Penetrator	Melbourne House (1)
2	Transylvanian Tower	Richard Shepherd (5)
3	Jet Pac	Ultimate (2)
4	Flight Simulation	Psion (3)
5	The Hobbit	Melbourne House (4)
6	3D Tanx	dk'tronics (6)
7	Chess	Psion (–)
8	Starship Enterprise	Silversoft (9)
9	Ah Diddums	Imagine (8)
10	Pssst	Ultimate (–)

Compiled by W. H. Smith. Figures in brackets are last week's positions

Top Ten programs for the ZX81

1	Flight Simulation	Psion (2)
2	Football Manager	Addictive (4)
3	Fantasy Games	Sinclair (3)
4	Space Raiders	Sinclair (9)
5	ZX81 Chess	Sinclair (7)
6	1K Games	Sinclair (10)
7	Defender	Quicksilva (6)
8	1K Chess	Sinclair (10)
9	Planet of Death	Sinclair (8)
10	Scramble	Quicksilva (–)

Compiled by Boots. Figures in brackets are last week's positions

U.S. SCENE

Rumours hot out of Silicon Valley

The latest hot rumour out of the home computer section of the Silicon Valley is that Atari may be planning to discontinue its 400 and 800 computers in favour of a single low cost model (the 600?), which is rumoured to cost the user about $160. Nothing from Atari yet to confirm or deny this, let alone any word on whether the predecessor would be compatible with its forerunners. My guess is that it would be sheer stupidity to market an incompatible machine, but we will watch and see.

Micro Software International has just recently released three advanced spreadsheet accounting programs for the Commodore 64 and VIC-20. These are called PractiCalc, PractiCalc Plus, and PractiCalc 64. The programs range in price from about $40 to $55, and possess every standard spreadsheet feature except "windowing." Being versatile and affordable, the software house is hoping to give the 64 and 20 a more serious image, thereby expanding the market base of both computers and, obviously, their products.

PractiCalc runs on a VIC-20 with a 16K expansion module. It supports 20 math functions and all BASIC functions. Cells can be formatted, the entire sheet can be recalculated from any point, and rows can be sorted alphabetically or numerically.

The other two version run on either the 64 or the 20 and offer advanced features. Both are capable of producing low-resolution bar charts (histograms) and can provide some data-base functions as well. One key press turns data from the sheet into a histogram display; any printer driven by the computer can be made to print out either the sheet display or the histograms.

When printing histograms, asterisks are used, eliminating the need for a printer with graphics capabilities. The main difference between PractiCalc Plus and PractiCalc 64 is size. The version for the 64 can produce a 250 row by 100 column matrix; the smaller program has roughly one third the capability.

All three programs are available on disc or tape. The documentation seems to be very clear and well written. For more details write to Micro Software International, 50 Teed Drive, Randolph, MA 02368.

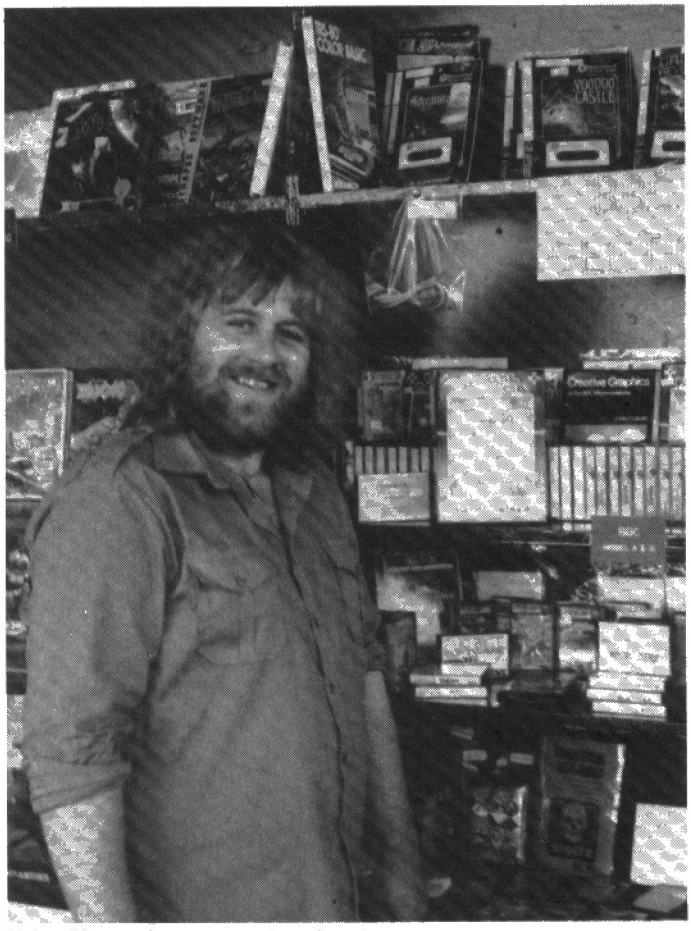
Two items of general interest. In the July issue of Radio-Electronics magazine (a very popular American hobbyist mag) there is an excellent article on how to build and implement an 8K non-volatile RAM expansion box for the Sinclair 1000 (ZX-81). The board is designed to be used with a 16K RAM pack to form a 32K system comprised of 16K dynamic RAM, 8K ROM, and 8K of non-volatile RAM.

For the uninitiated, non-volatile means that nothing is lost when the machine is turned off. What it really means is that users can use this device to extend the machine's operating system, giving it many extended capabilities. If you are interested, within the article is a price list and address from which you can order a complete kit which is very reasonably priced. If you cannot locate a copy of Radio-Electronics write to them at 200 Park Avenue South, New York NY 10003.

Another fascinating magazine article can be found in the June issue of Byte magazine, which is available in the UK. Written by two gentlemen from Texas Instruments, the subject of the article is the TI 99/2, and covers the development of the computer from its initial conception through prototyping. It is the first time (I believe) that a "high level" magazine, such as BYTE, has covered such a story concerned with a machine retailing for under $100. This clearly demonstrates the impact that such machines are having on the industry.

See you next week.

Bud Izen
Fairfield, California



Brian Howarth — computer adventurer

Mysterious adventures by mail order

Brian Howarth told Dave Carlos how his taste for adventure led him into the software business

A television programme, The Adventure Game, can take the credit for Brian Howarth's interest in writing computer adventure games.

He said: "I had been playing Dungeons and Dragons for some years, but it wasn't until I saw that programme that I realised the potential for computer-moderated adventures.

"I went out and bought the only micro I could find (which happened to be a TRS-80) and started to program an adventure in BASIC. Before long, I realised it couldn't be done, and had to learn machine code to get all the features I wanted. Some six exciting — and frustrating — months later, the Golden Baton was finished."

Brian sent his first game to Molimerx, which accepted it with only minor cosmetic changes. He said: "They persuaded me to turn the ideas into a series like the Scott Adams games which were available in America." And so the Mysterious Adventures series was born.

Brian now sells the Mysterious Adventures through his company Digital Fantasia, based at 24 Norbreck Road, Blackpool. As well as the mail-order software sales, he has a software shop with stock for a vast range of machines — and not just adventure games.

Brian's family and friends make up the rest of the company. His sister-in-law Sue Brookhouse does the administration, and his mother-in-law Jean Brookhouse looks after the shop. One friend helps with the programming, while another produces the artwork.

Although all the adventures so far have been written within the company, Brian is interested in seeing other people's work too.

He's also keen to set up a club to help and encourage adventure game writers and players.

Some of them seem to need encouragement. During my visit to Digital Fantasia, there were several phone calls from frustrated players stuck down caves or on top of pedestals.

Brian said: "We have stopped issuing the advice sheets with each game now, as some people read them before starting and spoiled the game. But they are freely available to those who want them."

He even claims to have saved the sanity of one of his customers. "One chap rang up about to go over the edge. We put him in touch with the program writer — not me this time — who managed to sort him out. He had been up until 3 am, it seems, and he was going crazy".

Brian believes adventuring is just coming of age, and that the sales and the interests from larger companies reflect this.

He said: "Space invaders is turning some people off now, and they are looking for mind-expanding games which require more than manual dexterity. There is also a growing interest from overseas. Canadian and Australian companies have made approaches and my series is now available in the states."

The range of machines for which the Mysterious Adventures are available is staggering. The list is currently TRS-80 models 1 and 3, Colour Genie, BBC, Atari 400 and 800, VIC-20 and in the very near future, Spectrum and possibly ZX81. The Oric and Dragon may follow. These are not all marketed by Digital Fantasia, though — some are with specialist software houses.

Brian said: "The Spectrum versions will contain high-resolution graphics drawn by a professional artist as an addition to the written description.

"This seems to be what the new market wants, but they must not be at the expense of the plot. Most people will still like to make up the images in their heads just as if reading a book. Due to the variation in the quality of televisions, it is important to have the words too so there is no ambiguity."

Another new feature will be the full sentence decoding of the user's input. This means that instead of using the unnatural verb/noun commands of most adventures one will be able to type real English, and the program will try to sort out what is required.

"When I'm writing an adventure the title comes first and I allow that to suggest image." Brian said: "The difficult part is to find the objective of the game. Then one has to build a logical set of circumstances around the objective.

"For example, the objective is to rescue the professor. Why is he in need of rescue? Who is holding him captive? Once these questions have been answered and the story can start. I do research the stories to some extent too. You can't make up all your own rules and some natural laws still need to be obeyed."

Looking to the future, Brian believes that advances in virtual memory are the most vital to his skill: "If we could get machines with huge memory capability, the possibilities are boundless.

"There could then be true role playing adventures, multi-player games — with cheap communication devices — speech recognition and synthesis — all areas in which we have interests and hope to work eventually."

Brian has no time for his own adventuring any more despite an unfinished campaign. He admits to playing the odd computer adventure though.

After being asked for his autograph at an exhibition recently it is obvious that he is responsible for many happy hours spent by others too.

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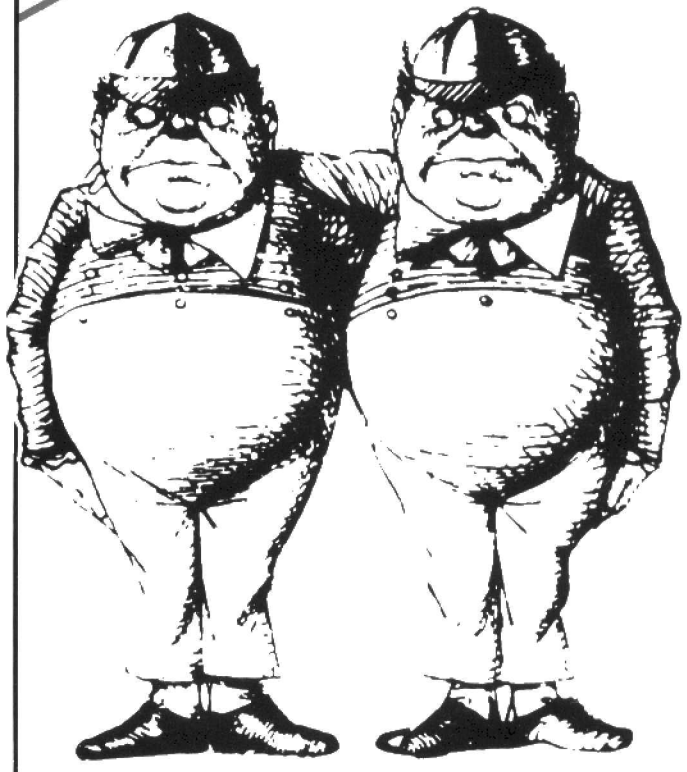

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Here's your key to keyboard competence

If you're a one-finger typist then you need Mike Biddell's typing tutor, which will work on both models of the Spectrum. It will teach you the keyboard as well as improving your speed

The Spectrum keyboard is adequate for "full-finger" touch typing and with this in mind, I decided to write a typing tutor which would improve my dreadful "one finger" style.

I decided the program would need an accurate clock to determine precise word/minute calculations, to inform the novice whether progress was being made. made.

In addition, simple entry of different texts would be needed, to allow the beginner to progress from using, say, one row of keys, up to complete keyboard fluency.

The number of errors made would be logged and displayed.

When RUN, you will be asked whether you want to enter new text or use the simple pre-programmed exercise: "The quick brown for jumped over the lazy dogs".

If you select pre-programmed text, the exercise starts immediately after you type P ENTER, so be ready.

The aim is now to position your fingers in the correct manner on the keyboard and watch the screen only. Do **not** look at the real keyboard or your fingers — look at the screen representation of the keyboard if you need to.

The screen picture you are now looking at is shown in the print out. The up arrow is pointing at the first letter to be typed, the (capital) T. You will need the shift key to enter this.

The program produces a high pitched beep if you have hit the correct key and a low pitched beep if you're wrong. Also, on entering the correct key stroke, the text scrolls from right to left continuously, repeating itself again and again.

After typing for at least 10 minutes, or until the end of a long piece of text, quickly hit the ENTER key alone and you will be informed of your **accurate** typing speed and the number of errors.

Points to bear in mind:

- There are 22 spaces between the quotes in line 185.
- The POKEs at lines 10, 11, 12, make the keyboard beep and effectively increase system variables REPDEL and REPPER, so that autorepeat is turned off. (See page 173 of the Sinclair Manual).
- FNX() in lines 125 and 3,000 makes use of the three TV frame count bytes. System variables 23672, 73 and 74. The addition of the third byte allows this to run over about three days, before it resets to zero.
- The typing speed calculation, in line 3040, is based on an average of five letters per word.

Model courtesy Nikon

Coping with the keyboard... model Suesie Dobson, 19

Variables

- **S$** choice of pre-programmed or new text
- **t$** practice text
- **FNX()** time since switch on, in seconds
- **sec 1** time typing started (seconds)
- **t** position in text marker
- **c** correct number of keys hit counter
- **r** length of text
- **m** mistakes counter
- **i** code of keyboard stroke
- **sec 2** time typing finished (seconds)

```
  10 POKE 23609,255
  11 POKE 23561,255
  12 POKE 23562,255
  50 PRINT INK 1;"NEW or PREPROG
RAMMED   text?       (ENTER n or p)
."
  52 INPUT s$
  53 IF s$="n" THEN GO TO 60
  54 LET t$="The quick brown fox
 jumped over the lazy dogs."
  55 GO TO 120
  60 INPUT ; INK 2;"Enter new te
xt...>"; LINE t$
 120 CLS
 125 DEF FN x()=INT ((65536*PEEK
 23674+256*PEEK 23673+PEEK 23672
)/50)
```

How it works

10 POKES system variable PIP, to make keyboard Beep

11-12 POKE system variables REPDEL and REPPER, to prevent auto repeat, since auto repeat is not desirable with a typing tutor

50-60 allow you to input your own text or use pre-programmed text in line 54

125 looks complicated, but simply defines a time function based on the Spectrum internal clock as held in the three-byte system variable FRAMES

126 gives sec 1 the value of this function just as you start typing and similarly line 3010 gives sec 2, the time value when you finish typing. The difference between sec 1 and sec 2 is therefore the elapsed time in seconds

130-200 create screen display. 200 creates a one line window on the text t and line 1000, by incrementing t, creates a scrolling effect for the window

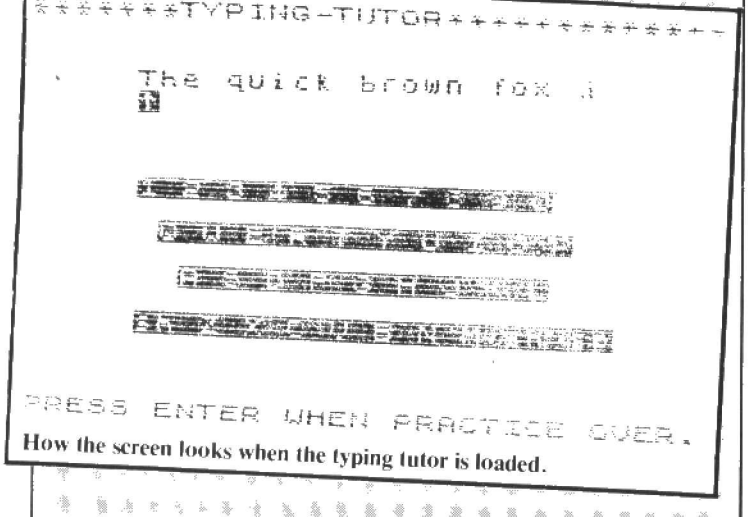
205 tests for incorrect keystroke and calls subroutine at 2000 if one is detected

210 detects correct key strokes and calls subroutine at 1000

Finally, hitting ENTER causes a jump to 3000 where accurate typing speed is calculated by line 3040, and errors are reported by line 3060

SPECTRUM PROGRAM

```
 126 LET sec1=FN x()
 130 PRINT FLASH 1; INK 1;"*****
**TYPING-TUTOR**********"
 140 PRINT AT 10,5; INK 2; INVER
SE 1;"1 2 3 4 5 6 7 8 9 0"
 150 PRINT AT 12,6; INK 2; INVER
SE 1;"Q W E R T Y U I O P"
 160 PRINT AT 14,7; INK 2; INVER
SE 1;"A S D F G H J K L"
 170 PRINT AT 16,5; INK 2; INVER
SE 1;"sh Z X C V B N M sh sP"
 172 PRINT AT 20,0; FLASH 1;"PRE
SS ENTER WHEN PRACTICE OVER."
 175 PRINT AT 6,5; INK 3; INVERS
E 1;"↑"
 180 LET t=1
 181 LET c=0
 182 LET r=LEN t$
 185 LET t$=t$+"
     "
 190 LET m=0
 200 PRINT AT 5,5; INK 7; PAPER
0;t$(t TO t+20)
 201 LET i=CODE INKEY$
 202 IF i=0 THEN GO TO 200
 203 IF i=13 THEN GO TO 3000
 204 PRINT AT 7,14; INVERSE 1;IN
KEY$
 205 IF i<>CODE t$(t TO t) THEN
GO SUB 2000
 210 IF INKEY$=t$(t TO t) THEN G
O SUB 1000
 230 GO TO 200
1000 LET t=t+1
1002 LET c=c+1
1005 BEEP .1,40
1010 IF t>r THEN LET t=1
1020 RETURN
2000 LET m=m+1: PRINT AT 7,20;"E
rrors=";m;"  "
2010 BEEP .1,-10
2020 RETURN
3000 DEF FN x()=INT ((65536*PEEK
 23674+256*PEEK 23673+PEEK 23672
)/50)
3010 LET sec2=FN x()
3020 LET sec=sec2-sec1
3030 CLS
3040 PRINT INK 1;"Typing speed=";
INT ((c/5)/((sec+.1*(c+m))/60))
;" words per minute"
3050 PRINT
3060 PRINT INK 1;"You made ";m;"
 mistakes"
3070 PAUSE 400
3080 RUN
```



How the screen looks when the typing tutor is loaded.

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Inter-Planetary Trader Dragon 32 £5.95

Bamby Software, Leverburgls, Isle of Harris PA83 3TX

Inter-Planetary Trader is a textual flit from one planet to another buying and selling cargo.

It could be a very nice romp but inevitably there are hazards. Now, I found these a bit too severe. Maybe I was unlucky but I was killed off far too often.

The problem is that evasive action is hardly within your control; the outcome is decided by the computer equivalent of a dice throw.

After all if you've sweated studying the market, buying and selling carefully it seems hardly fair to be wiped out so casually. At least if you were sent to jail you could buy yourself out. Death can be fatal! **M.P.**

instructions	80%
playability	70%
graphics	n/a
value for money	80%

★ ★ ★

Galaxy Attack 48K Spectrum £5.95

Sunshine Books, Hobhouse Court, 19 Whitcomb Street, London WC2 7HF

Galaxy Attack is three space adventure games in one. First you fly into space to attack a Vruggian invasion fleet homing on Earth. After six minutes you crash land on a distent planet to make repairs, meanwhile fending off the unfriendly local robots. If you survive, into space again to track in on the enemy mothership and launch a neutron torpedo into her vitals.

On loading you a get a nice little tune and some instructions, with the use of 10 keys which are also given on a keyboard cut-out printed on the insert — a useful idea. The instructions are not particularly clear, though.

Each phase is timed to six minutes, however well you are doing, and it would be nice to be able to skip direct to the later ones without wading all the way through.

instructions	50%
playability	50%
graphics	75%
value for money	80%

★ ★ ★

The Wizard Warriors 48K Spectrum £4.95

Abersoft, 7 Maes Afallen, Bow Street, Dyfed SY24 5BA

The review copy proved difficult to load, but this should not deter you from a well written graphics adventure.

Once you start your quest at the highest crypt level you will understand why. In addition to the wizard's visible warriors are his invisible defenders, whom progress you may only follow on your radar except for their fleeting moments of materialisation.

You may survive one level but can you descend and cope with the multiplying hordes, visible and invisible? Can you deal with the ultimate confrontations of the Eagle (1000 pts) or the wizard himself (2000 pts)?

Destroying his minions with your laser rifle will earn between 100 and 500 pts per man. Some might argue that it is just a variation on the usual graphics mazes — if so it is with a difference.

instructions	80%
playability	85%
graphics	80%
value for money	80%

★ ★ ★ ★

Leopard Lord 48K Spectrum £9.95

Kayde, The Conge, Great Yarmouth, Norfolk NR30 1PJ

This is a 40-room adventure in BASIC, with purely textual display. The plot is quite good, though perhaps rather limited in scope, but the text fails to stire the imagination.

The use of BASIC means that responses are somewhat slow, and the player has to spell everything out in full, where other adventures allow a laconic N to mean "GO NORTH". A particular irritation is that there is only one chance in 64 of getting anywhere useful in the initial moves, most of which leave the current location unchanged.

The vocabulary features 17 verbs and 55 nouns, and there is a basic three-word format. This means that some commands have to be abbreviated, for example where the form "Do X to Y" is necessary. There are a few textual errors, but only one is serious. This gives the word MIRROR for ARMOUR, which would have fatal results. **D.T.**

instructions	75%
playability	60%
graphics	n/a
value for money	50%

★ ★ ★

Death Satellite Oric-1 £6.90

A & F, 830 Hyde Road, Gorton, Manchester M18 7JD

To succeed, a role-playing game must convince you that you're there, that it's you boldly going and generally swashbuckling. If it fails in this respect it can fail completely.

Death Satellite sails near to the wind but gets away with it. It's not that the game is boring, it's just the vocabulary seems to be very limited. It would have been nice if HELP could have suggested a few words to get me started. I also found the interpreter a bit on the pedantic side.

This apart, the game poses some challenging problems in an interesting scenario. The response time was fast — no hanging about waiting for responses.

To summarise, the game is awkward to start with but becomes quite absorbing once you know enough of the vocabulary to do things. With a little more work this could become a very good adventure. **G.P.**

instructions	40%
playability	65%
graphics	50%
value for money	70%

★ ★ ★

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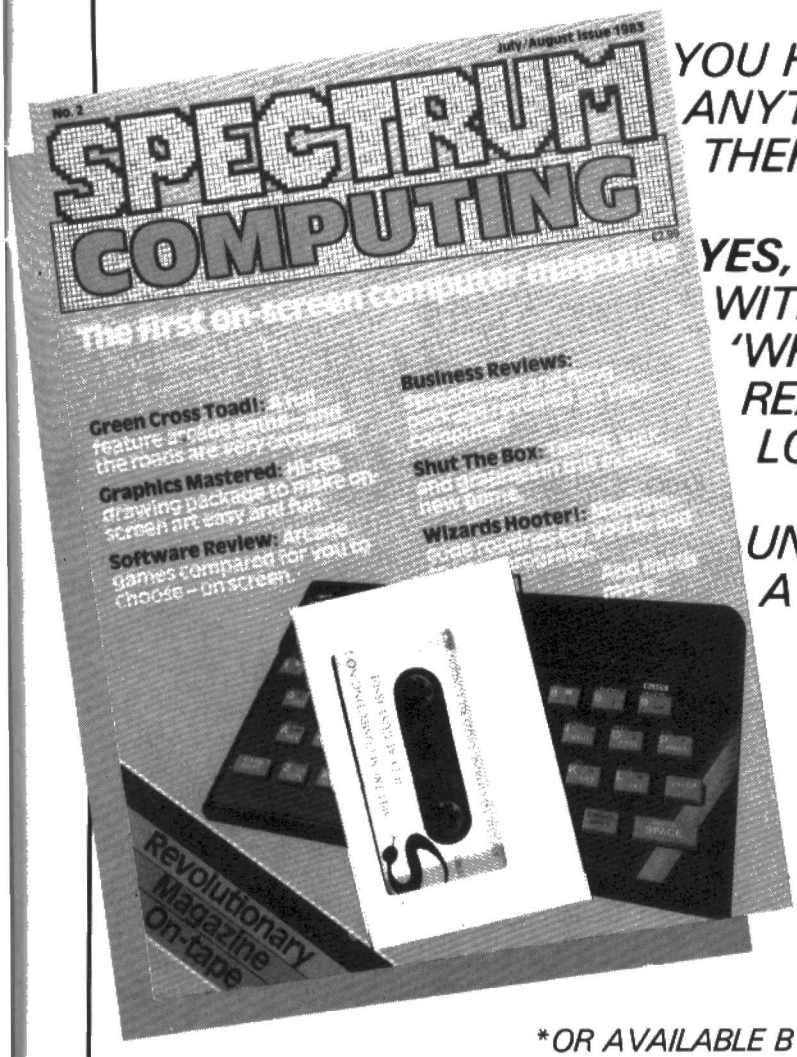

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After-sales letdown

Recently I sent my Spectrum off to Sinclair Research to get the memory upgraded to 48K.

At first I was a little hesitant about sending it off, after waiting 13 weeks for it to be delivered in the first place. But after seeing in a magazine that the company had been cautioned by the Advertising Standards Authority, I decided to give them one more chance.

I sent my Spectrum off on May 23. In the letter, Sinclair promised a "10-day turn-round", so I expected to get it back within three weeks at most.

A fortnight came and went, and a few days later I rang Sinclair Research, who told me that it had not yet returned from the upgrading factory. I got my Spectrum back nearly four weeks after I had sent it off.

What's more, Sinclair promised a free cassette, so I chose Flight Simulation. But when I opened the box, no cassette, and the box had been broken.

And there was more to come. When I looked at the Spectrum, there was a gap in the case, and when I opened it up I saw that the heat-sink had been put in wrongly so that a corner was poking out.

This meant that the case could only be screwed back together with great difficulty, and it wobbled.

I think it's a shame that after producing two great computers, Sinclair can't find the skill or the common sense to give a good after-sales service.

Stephen Russell, Solihull, West Midlands

Bill Nichols, of Sinclair Research, said: "What we promise is a 10-day turnaround from receipt to despatch — we can't vouch for how long things will take in the post. So just under four weeks for Mr Russell to get his Spectrum back sounds fair enough.

"If there's a technical fault in a machine that's been upgraded, it should be sent back to us and we'll sort it out. Call Camberley first, on 01-235 9649, and we'll send off labels to cover the cost of postage."

You can dodge by joystick, too

I was delighted to see that you had included a review of our game Dodger in HCW 17. However the review states that a joystick version of the game is not available.

This is in fact incorrect — the version you had for review was a keyboard version, but we have a joystick version too.

It is up to the purchaser to decide when buying.

Grant Shapps, Managing Director, Firefly, London W1

Aw shucks, it was nothing

I am writing to thank you for helping me to get my Oric-Forth cassette from Oric Products. I wrote to you about four weeks ago to say that I had not received the promised Forth cassette.

Subsequently I had a letter from Oric Products' public relations agency, apologising for the delay and enclosing a second copy of the Welcome to Oric cassette (which I had been unable to load).

This second cassette loaded without difficulty, and I now have the Forth cassette, which also loads quite reliably. So I would like to say a big thank you to Home Computing Weekly.

D. Hazel, Southsea, Hants

Disc break for Light Cycle

Marc Freebury's excellent Atari game Light Cycle (HCW 16) is fast, furious and addictive. But it doesn't work on a disc system since it places the character set in the DOS memory.

To allow it to work on a 48K disc system, I have placed the character set in page 128. I did this as follows:

In line 220, alter 7168 to 32768 and 28 to 128.

In line 230, change 7192 to 32792.

It should then work properly with a disc.

Ian Stringer, Welling, Kent

Brain Trainer has a brainstorm

With regard to my program published in Issue 19, Brain Trainers for your ZX micro, a rampant bug seems to have absconded with part of the program — namely, check and end routines 9000 and 9100. Both Mathspeed and Quiz need these routines.

Further, lines 10 to 40 inclusive from Mathspeed need to be included in Quiz.

The idea was to demonstrate how programs could be built up around existing routines and subroutines. Lines 10-40 are initialising routines, and subroutines 9000 and 9100 are all-purpose checking and ending subroutines.

I would also be pleased it you would mention that although I submitted these programs, they were developed by my pupils in the Periton Mead School Computer Club, Minehead.

Ray Elder, Minehead, Somerset

```
9000 LET G=G+1
9010 PRINT AT 8,0;A$," IS ";
9020 IF A$<>Q$ THEN GOTO 9060
9030 PRINT "CORRECT ";
9040 LET S=S+1
9050 GOTO 9070
9060 PRINT "WRONG ";
9070 PRINT N$
9080 FOR I=1 TO 50
9085 NEXT I
9090 CLS
9095 RETURN
9100 CLS
9110 PRINT AT 5,0;"YOU SCORED ";
S
9120 PRINT AT 8,0;"PRESS NEWLINE
 FOR ANOTHER GO."
9130 IF CODE INKEY$<>118 THEN GO
TO 9130
9140 LET G=0
9150 LET S=0
9160 CLS
9170 RETURN
```

Are you brave enough to rescue the damsel from Kong?

Now's your chance to be a hero as you avoid hurtling barrels and deadly fireballs in Conrad Jagger's game for the 16K ZX81

Kong is at the top of a tower with a damsel in his clutches — and you're the hero she is depending on.

In my game for the 16K ZX81 there's only one route to the top: along the ground floor, up a flight of stairs, along the next floor to a second set of stairs and, finally, along the last floor.

Then, with any luck, you'll rescue the woman and unfurl a flag to herald your success to the waiting crowd below.

But Kong will do his best to thwart you (*) by rolling barrels (0) and hurling fireballs (X) at you. And the higher you go to faster the obstacles come at you.

You score points in your rescue attempt as follows:

One point: move right or left without being hit
Five points: jump over an obstacle
Ten points: climb stairs to a higher floor
1,000 points: rescue the woman

Your ever-increasing score will be displayed in the top left-hand corner of the screen.

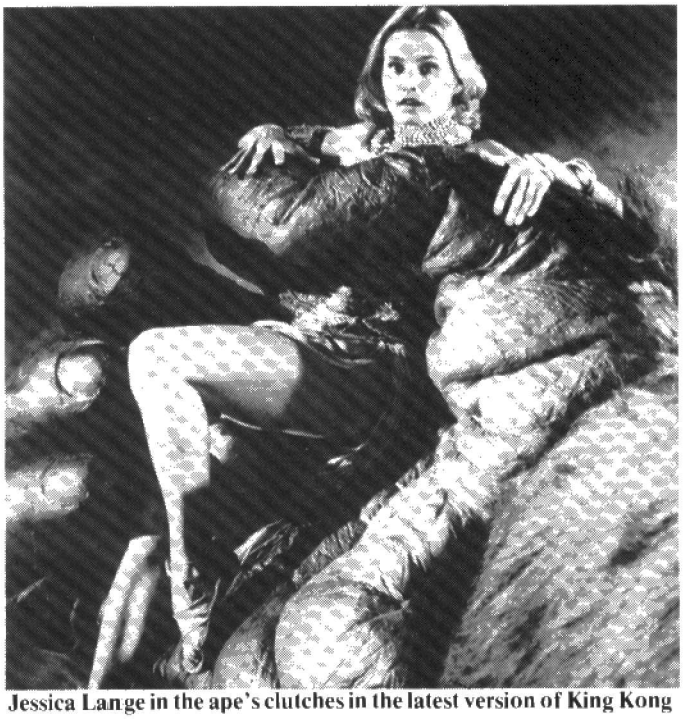
These keys control your movement:

M left
Full stop right
A up
Z jump

Hints on conversion

This program will run on both the ZX81 16K and the Spectrum, but better graphics are available on the Spectrum.

Also, as BASIC commands are used, conversion to other computers should be straightforward.



Jessica Lange in the ape's clutches in the latest version of King Kong

How it works

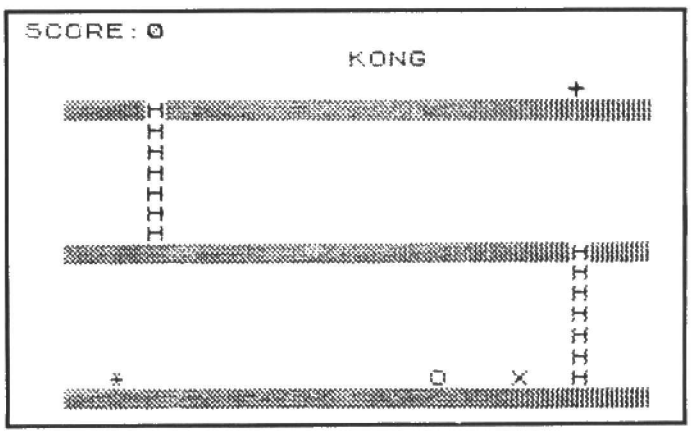
1-60 set up variables
70-116 set up screen
117-118 set up two more variables
120-140 set up more of the screen
145 GOTO 4000 if man reaches "+"
150 allows man to move if moving keys are pressed
160 updates score
170-180 goes to moving sub-routines if moving keys are pressed
190 checks for man crashing
191-194 works out speed of barrels
200-240 move barrels
1000-1050 make man climb, add on score etc.
1000-1010 check whether man is at ladder
1020 adds 10 points to score
1030-1045 does actual climbing
2000-2050 make man jump and add on score
3000-3020 does man crashing
3001-3002 put blank spaces over old barrels
3040-3050 scan keyboard to see if any keys pressed and if so game starts again
4000-4005 add 1000 points to score and show moving flag
4010 puts blank space over old man
4020 renews level man and barrels are on
4030 gives man new position
4040-4050 clear screen and start another sheet

Variables

SC score, amount of points player has
A level of building that man is on
BA,A position of Barrel 1 "O"
X,A position of Barrel 2 "X"
L,K position of Ladders
M,A position of Man (you) "*"
Z difficulty of speed of game
N the loops (FOR and NEXT)

```
  10 LET SC=0
  20 LET A=19
  25 CLS
  30 LET BA=20
  40 LET M=3
  50 LET X=INT (RND*10)+BA
  60 IF BA=X OR X+1=BA OR BA+1=X
 THEN GOTO 50
  70 PRINT AT 3,10;"       KONG"
  80 LET Z=1
  90 LET K=27
 100 PRINT AT 20,0;"
                                "
 101 PRINT AT 19,0;"    "
 102 PRINT AT 12,0;"    "
 103 PRINT AT 5,0;"    "
 105 PRINT AT 0,0;"SCORE:";SC
 110 PRINT AT 6,0;"
                                "
 111 PRINT AT 13,0;"
                   H            "
 115 IF A=12 THEN LET Z=2
 116 PRINT AT 5,27;" "
 117 LET L=6
 118 IF A=5 THEN LET Z=3
 120 FOR N=A TO 13 STEP -1
 130 PRINT AT N,K;"H"
 135 PRINT AT L,6;"H"
 137 LET L=L+1
 140 NEXT N
 145 IF A=5 AND M=27 THEN GOTO 4
000
```

```
 150 LET M=M-(INKEY$="M")+(INKEY
$=".")
 160 IF INKEY$<>"" THEN LET SC=S
C+1
 169 PRINT AT 5,27;"+"
 170 IF INKEY$="Z" THEN GOSUB 20
00
 180 IF INKEY$="A" THEN GOSUB 10
00_
```



ZX81 PROGRAM

```
190 IF M+1=BA OR M+1=X OR M+1<2
THEN GOSUB 3000
191 PRINT AT A,M;" * "
192 IF Z=1 THEN PRINT AT A,BA;"
 ";AT A,X;"X "
193 IF Z=2 THEN PRINT AT A,BA;"
 ";AT A,X;"X "
194 IF Z=3 THEN PRINT AT A,BA;"
 ";AT A,X;"X "
200 LET BA=BA-Z
210 LET X=X-Z
220 IF BA<0 THEN LET BA=30
230 IF X<0 THEN LET X=30
240 GOTO 100
1000 IF A=12 THEN LET K=6
1010 IF M+1<>K THEN RETURN
1020 LET SC=SC+10
1030 FOR N=1 TO 7
```

```
1035 LET A=A-1
1040 PRINT AT A,M+1;"*";AT A+1,K
;"H"
1045 NEXT N
1050 RETURN
2000 PRINT AT A,M+1;" ";AT A-1,M
+1;"*";AT A-1,M+1;" ";AT A-1,M
2010 LET M=M+2
2020 PRINT AT A-1,M+1;"*";AT A-1
,M+1;" ";AT A,M+1;"*";AT A-1,M+1
;" "
2030 IF M+1=BA OR M+1=X OR M+1<2
 THEN GOSUB 3000
2040 LET SC=SC+4
2050 RETURN
3000 PRINT AT A,M+1;"*"
3001 IF M+1=BA THEN PRINT AT A,B
A;" "
3002 IF M+1=X THEN PRINT AT A,X;
"
3005 FOR N=0 TO 10
3010 PRINT AT A,M+1;"▚";AT A,M+
1;"▞"
3020 NEXT N
3040 PAUSE 4E4
3050 RUN 1
3051 RUN 1
4000 LET SC=SC+1000
4001 FOR N=0 TO 20
4002 PRINT AT 1,26;"▚▞";AT 2,26
;"▞▚";AT 3,26;"▚▞"
4003 PRINT AT 4,26;"▌";AT 5,26;"
▐"
4004 PRINT AT 1,26;"▞▚";AT 2,26
;"▚▞";AT 3,26;"▞▚"
4005 NEXT N
4010 PRINT AT A,M;"  "
4020 LET A=19
4030 LET M=3
4040 CLS
4050 GOTO 20
```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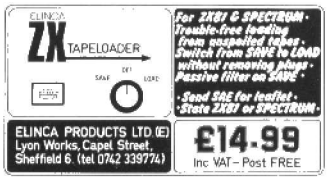

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THIS IS MEANT FOR **YOU** — ESPECIALLY IF YOU USE A SINCLAIR ZX81 or SINCLAIR SPECTRUM COMPUTER, or even ANY COMPUTER.

HAVE YOU EVER HAD THAT DREAM OR EVER WISHED THAT YOU HAD "WON ON THE POOLS" — AT LAST YOU CAN TURN IT INTO REALITY.

THERE **IS** A SECRET OF "HOW TO WIN ON THE FOOTBALL POOLS" — **IT CAN BE DONE.** I DISCOVERED THE SECRET A LONG TIME AGO — NOW, **FOR THE FIRST TIME** I'M PREPARED TO SHARE IT WITH YOU.

HOW DOES THIS INTEREST YOU — I HAVE DOCUMENTARY EVIDENCE BY WAY OF POOLS WINNINGS DIVIDEND SLIPS/ CANCELLED CHEQUES, etc, SHOWING MY PRESENT WINS ON THE POOLS AS FOLLOWS:—

First Dividends	Second Dividends	Third Dividends	Fourth Dividends	Fifth Dividends	Sixth Dividends
765	1,818	2,942	1,952	631	93

A GRAND TOTAL OF 8,201 (EIGHT THOUSAND, TWO HUNDRED AND ONE DIVIDENDS — so far).

I HOLD THE UNCHALLENGED WORLD'S RECORD FOR POOLS WINS

I AM MAKING THIS VERY SPECIAL, REDUCED PRICE OFFER TO READERS OF HOME COMPUTING WEEKLY FOR A LIMITED PERIOD ONLY.

Do not let anyone tell you that it is impossible to "WIN ON THE POOLS" — since I perfected my method, **I HAVE WON REGULARLY** for over **TWENTY-FIVE YEARS** — proof that it is no 'flash-in-the-pan'.

I have CHALLENGED THE WORLD with my record of wins and with all the evidence that I possess — NO ONE has ever been able to accept the Challenge — I KNOW NO ONE EVER WILL.

MY SECRET IS NOW PLACED ONTO COMPUTER CASSETTE FOR YOU.

THE METHOD IS THE GREATEST TREBLE CHANCE WINNER IN THE HISTORY OF FOOTBALL POOLS — IT WILL LAST FOREVER — BOTH FOR ENGLISH AND AUSTRALIAN FOOTBALL POOLS, WITH EQUAL SUCCESS.

I now intend to give a limited number of people the opportunity of making use of my method — perfected over 25 years and proving itself on **EVERY ONE OF THOSE TWENTY-FIVE YEARS.**

You will have noted details of my personal achievements so far, as given to you above.

A GRAND TOTAL of 8,201, yes 8,201 POOLS DIVIDENDS, including **765 FIRST DIVIDENDS.**

My Pools Winnings Dividend slips now number so many, that they fill a very large suitcase and will stand as my evidence of all claims in **ANY COURT OF LAW IN THE WHOLE WORLD.**

Taking just the past 25 years into consideration, I have won ON AVERAGE over 328, (THREE HUNDRED AND TWENTY—EIGHT) Pools Dividends **EVERY YEAR** — or — AN AVERAGE of over **SIX DIVIDENDS EVERY WEEK** for **TWENTY—FIVE YEARS.**

You have my absolute Guarantee of the complete authenticity of every claim, cheque, document, letter, etc, contained herein.

I do have losing weeks, but ON AVERAGE my winnings show over SIX DIVIDENDS **EVERY WEEK** for the past 25 years.

I know that you are now utterly flabbergasted, it always happens to everyone with whom I come into contact. Please just sit back and **imagine** for a moment my **FIRST DIVIDEND** wins alone — they now number 765 (seven hundred and sixty-five) and will probably be even more by the time this advertisement appears in print.

I AM NUMBER ONE IN THE WORLD AND NO ONE DISPUTES IT.

For as long as I continue to enter the Football Pools my wins will continue. I have already said, they apply, with equal success to both English and Australian Football Seasons.

I intend to release a STRICTLY LIMITED NUMBER of copies of my cassette, (either for Sinclair ZX81 or Sinclair Spectrum) — DO NOT DELAY AND FIND YOU ARE TOO LATE, in which case I would have to refund your money.

I am so confident of **YOUR** success that if do **not** win at least THREE FIRST TREBLE CHANCE DIVIDENDS in the first 20 weeks of entering, I will completely cancel the balance of the purchase price and you do not have to pay me another penny, at any time, no matter how vast your winnings.

I only wish that space would allow me to give you photographs of my winnings slips, cancelled cheques, etc, but it is of course impossible — they now number 8,201 dividends. I have however given JUST A FEW EXTRACTS from ORIGINAL LETTERS I hold from my small Clientele.

I am the Inventor and Sole Proprietor of my method, Registered as EUREKA — ('I have found it'). I am known as The Professor in Pools Circles — I am of the Highest Rank in Forecasting — this is beyond dispute. I am marketing a limited number of Computer Cassettes, under my Registered Company — FOOTBALL ENTERPRISES.

My initial charge for a copy was £75, but for this SPECIAL REDUCED PRICE OFFER I will send you a copy, (for ZX81 or Spectrum) for £20, (twenty pounds) ONLY, plus your Promise to pay me the balance of £55 — **ONLY** IF YOU WIN AT LEAST THREE FIRST TREBLE CHANCE DIVIDENDS IN YOUR FIRST 20 WEEKS OF ENTERING — otherwise you owe me NOTHING FURTHER.

This is surely proof absolute of my supreme and utter confidence in my own abilities and in the capabilities of my discovery. I could easily CHARGE £2,000 per cassette on the evidence I possess, but that would not be fair to everyone, which is what I want to do.

My method is WORLD COPYWRIGHT, any infringement and immediate proceedings will be taken, without prior warning. It is truly ingenious and has stood the test of time.

My cassette is simplicity itself to operate and you'll be given FULL DETAILS for weekly calculating. Your entry need not involve you in any large weekly stakes, you can enter for as little as 25p, if you wish.

I charge NO COMMISSION on any of your wins — no matter how BIG they may be.

I realised a long time ago, that it was no good sitting down and **dreaming** about winning the pools, so I burnt the candle at both ends, working late into the night, occasionally RIGHT THROUGH THE NIGHT, I **KNEW** there was a way, eventually it all paid off and has been doing so ever since.

I am unable to vary my offer to anyone, so please do not request it, as I shall very easily dispose of the cassettes I have prepared and am making available.

IMMEDIATELY I perfected my method I commenced winning right away, (first with just a little £163, the first week I used it), I HAVE NEVER LOOKED BACK SINCE, amongst all those dividends was one for over **EIGHT THOUSAND POUNDS** for just **one eighth of a penny stake.**

I will release a copy on cassette, to you, on receipt of the completed order form and your Signature thereon, confirming you will treat it in the STRICTEST CONFIDENCE between us and retain it for your **OWN USE ONLY.**

PLEASE NOTE:
If you happen to be the proud owner of a Computer, **other than** a Sinclair ZX81 or Sinclair Spectrum, you can still purchase a copy of my method, for the same price and program it YOURSELF on to YOUR OWN COMPUTER.

Don't take my word for it, read what people write about me and my method:—

I won on Zetters last weekend. It was not a big sum, but all the same it was a very nice surprise for me. J.C., Lancs.

I appreciate the straightforward method you adopt, which is such a contrast to the rubbish of misrepresentation which is so common in the Betting World, by unscupulous and self-opinionated charlatans. C.H., Devon

Winnings cheque received today, sincere thanks. D.N., Devon

I congratulate you on your achievement. R.R., Wales

I should like to thank you for a most exciting season and look forward to hearing from you again. J.C., Hants.

I would like to acknowledge cheque and say how much I appreciate your integrity. J.M., Scotland

Many thanks for your system, it is all you say and more. J.C., Lancs.

Your wonderful system won me £3,527. I intend to visit London soon and will be able to come and see you personally. (Overseas Client). P.M., Kampala.

Many thanks for trying so hard to please us all, your brother should be thanked also. One of our daughters, WHOSE HUSBAND YOU HELPED ENORMOUSLY, has just phoned, the four of them have just spent a lovely holiday in Spain. K.R.,Isle of Man.

I sent in my FIRST entry last week and won 2nd and 3rd dividends, as you will see from the enclosed certificate. One more and I would have collected over £400 for FIRST dividend. Once I've won a fair amount I shall be staking from winnings and at 2p per line, A FIRST DIVIDEND last week at this would have been over £3,000. C.A., Yorks.

I am very interested indeed and enclose £20 herewith. I agree to pay you the balance of £55 **ONLY** if I win at least THREE FIRST TREBLE CHANCE DIVIDENDS in my first 20 weeks of entering — otherwise I owe you NOTHING FURTHER at any time — no matter how much money I win. My Signature below is my Undertaking to retain complete and absolute confidence about the method.

Name.....

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Signature HCW4

The Managing Director,
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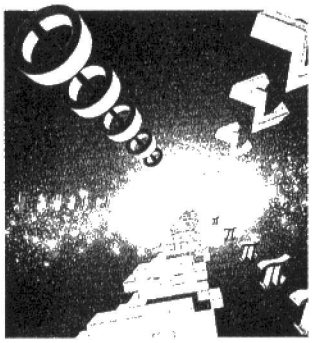

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